FRANCESCA FULMINANTE

THE URBANISATION OF ROME AND LATIUM VETUS

FROM THE BRONZE AGE TO THE ARCHAIC ERA

CAMBRIDGE

THE URBANISATION OF ROME AND LATIUM VETUS

This book focuses on urbanisation and state formation in middle Tyrrhenian Italy during the first millennium BC by analysing settlement organisation and territorial patterns in Rome and Latium vetus from the Bronze Age to the Archaic Era. In contrast to the traditional diffusionist view, which holds that the idea of the city was introduced to the West via Greek and Phoenician colonists from the more developed Near East, this book demonstrates important local developments leading to higher complexity, dating to the beginning of the Early Iron Age, if not earlier. By adopting a multi-disciplinary and multi-theoretical framework, the book circumvents the old debate between exogenous and endogenous perspectives by suggesting a network approach that sees Mediterranean urbanisation as the product of reciprocal catalysing actions.

Francesca Fulminante is Supervisor and Visiting Fellow of Archaeology at the University of Cambridge. She is author of *The Princely Burials in Latium Vetus* and has excavated in Rome, Veii, Pompeii, Crustumerium, Gubbio and Broom (Bedfordshire).

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To my family

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PREFACE

This book presents the results of my PhD research, conducted at Cambridge University between 2004 and 2008. The analyses were performed between 2005 and 2006, and the writing was completed in 2007. Therefore, the bibliographic entries date mostly from that time. During my revision of the manuscript at the Netherlands Institute for Advanced Studies in the Humanities in 2009–10, I consulted some new studies, such as the PhD dissertation of Luca Alessandri, *Il Lazio centromeridionale nell'età del Bronzo e del Ferro* (University of Groningen, 2009), and incorporated the results into my own account, although I have omitted the analyses.

Other articles or books were published during the preparation of my thesis for publication – for example, A. Ziółkowski, 'Frontier Sanctuaries of the *ager Romanus antiquus*: Did They Exist?' *Palamedes*, 4.1, 2009, pp. 91–130; F. Quondam, 'Rinvenimenti di etá proto-storica sulle pendici nord-orientali del Palatino, *Scienze dell'Antichitá*, 17, 2011, pp. 621–41; B. Barbaro, *Insediamenti, aree funerarie ed entità territoriali in Etruria meridionale nel Bronzo finale* (Florence, 2010); and P. Attema, J. Jan Burgers and P. Van Leusen, *Regional Pathways to Complexity*: *Settlement and Land-Use Dynamics in Early Italy from the Bronze Age to the Republican Period* (Amsterdam, 2010) – but it was not possible to integrate into the present volume the findings reported in these publications.

Finally, A. Carandini (ed.), *Atlante di Roma* (Milan, 2012), an important source on the archaeology of Rome and its territory, was released at the same time that the final version of this manuscript was submitted for publication. S. Stoddart is preparing a volume which will cover themes parallel to those addressed in this book in relation to the region north of the Tiber: *Power and Place in Etruria: The Spatial Dynamics of a Mediterranean Civilisation, 1200–500 BC.*

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Simon Stoddart, my PhD supervisor, has guided my research with patience, rigour and friendship and has provided encouragement in moments of need. My advisor, Martin Millett, provided valuable suggestions and guidance throughout all phases of the research. My examiners, John Patterson and John Bintliff, challenged my thesis and helped me improve my arguments. Alessandro Guidi, Francesco di Gennaro, Christopher Smith, an anonymous reviewer and Gabriele Cifani read the manuscript at different stages and provided helpful suggestions and information. Anja Klockner and Walfred Martini offered

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Ulla Rajala and Heli Arima were good companions and friends during the Cisterna Grande fieldwork adventure at Crustumerium during the years of work on my PhD, and Ulla's similar work on Etruria was a model for some of the analyses and applications. I shared with Letizia Ceccarelli the joys and challenges of studying at Cambridge and working at the Col di Marzo excavation for the Etruscan Frontier Project directed by Simon Stoddart and Caroline Malone.

To all these people goes my deepest gratitude. However, this book would not have been possible without the love and support of my Italian and British family. This book is dedicated to them. Finally a special thanks to Stephen for his useful comments and detailed 'editing' skills and to Luigi, Maria Letizia and Anna for their photographic skills.

INTRODUCTION

Ever since *La formazione della città nel Lazio* (The Formation of the City in Latium) seminar, held in Rome in the late 1970s,[1] the origin of the city in middle Tyrrhenian Italy has been a hugely debated topic. To simplify a complex question, the key issues of the debate have always been: When did the city begin in middle Tyrrhenian Italy – the sixth, seventh or even eighth century BC? And what was there before the city?

On the first question, scholars generally agree that urbanisation was well under way in middle Tyrrhenian Italy between the late Orientalizing Age and the beginning of the Archaic Age (i.e., between the second half of the seventh century and the sixth century BC).[2] By that time Rome had been largely monumentalised and most of its civic, religious and political foci had been built or even restored in stone or with a stone foundation:[3] the Regia, the Temple of Mater Matuta in the sacred area of S. Omobono, the Archaic temple found under the so-called *auguratorium* in the Magna Mater sanctuary at the south-west corner of the Palatine Hill, the House of the Vestals and the so-called House of the Kings at the foot of the Palatine Hill towards the Forum, the Forum itself with the Comitium, the so-called Servian Wall, the Cloaca Maxima, possibly the Circus Maximus, and finally the Capitoline temple, dedicated in the first year of the Republic, 509 BC.[4] Similarly, by the same period, numerous centres across Latium vetus and Etruria also had defensive stone walls and were adorned with monumental temples with stone foundations.[5]

However, recent research, such as stratigraphic investigations conducted in the historical and archaeological centre of Rome (Palatine Hill and Forum valley), and re-evaluations of old excavations have drawn attention to a series of civic monuments dating from between the middle of the eighth and the beginning of the seventh century BC. These include an earthen wall around the Palatine and a rectangular building for communal meals and gatherings (which represent an earlier phase of the later House of the Kings with stone foundations), both dated to the mid-eighth century BC; a place for civic assemblies in the Comitium; and communal civic cult places, such as the votive deposit of the Capitoline Hill and possibly the votive deposit of the *tholos* of Vesta.[6] These seem to indicate the existence of a community of citizens, possibly ruled by a centralised authority, whose communal and political identity is conveyed and defined by those monuments, even at such an early time.[7]

As for the origin of the city in middle Tyrrhenian Italy and the nature of settlements in the region, the debate over the past forty years can be viewed as polarised between two opposing schools of thought, 'exogenous' and 'endogenous' (although many scholars actually fall somewhere in between). Proponents of the exogenous view (mainly historians, classicists and etruscologists) highlight the role of external influences (diffusionist model), namely from the Near East via Greek and Phoenician colonists, in the birth and development of cities and urban aristocracies.[8] By contrast, proponents of the endogenous view (mainly pre-historians and a minority of etruscologists and classical archaeologists) emphasise autochthonous factors and local trends towards higher complexity, which can be detected in settlement patterns and in social developments (mirrored by funerary evidence) already by the end of the Final Bronze Age and the beginning of the Early Iron Age (end of the eleventh and beginning of the tenth century BC), if not earlier.[9]

Building on this tradition of studies as well as on the funerary approach adopted in *Le sepolture principesche nel Latium vetus* (Princely burials in Latium vetus [Fulminante 2003]) and using newly published and unpublished data from recent surveys and excavations, this work will investigate urbanisation in middle Tyrrhenian Italy. It will focus specifically on settlement patterns in the Roman region from the Middle Bronze Age to the Archaic Age, that is, from the seventeenth to the end of the sixth century BC.

In particular, three levels of analysis will be adopted, and the development of very early Rome (Chapter 3) will be defined in relation to its immediate hinterland (*ager Romanus antiquus*, Chapters 4 and 5) and the regional setting (Latium vetus, Chapter 6). Then settlement patterns will be compared with other trajectories of social evolution: social stratification (as mirrored in funerary evidence), economic developments, craft specialisation, ritual and cult places, ethnicity and identity, land evaluation and vegetation history; in this way it will be possible to demonstrate that local developments leading to

1. 'Cypro-Phoenician' bowl from the Bernardini 'princely' tomb in Praenestae (Palestrina), second quarter of the 7th century BC. (Rome, Museo Nazionale di Villa Giulia, ICCD photographic archive inv. F3 686.)

centralisation and higher complexity had already started by the end of the Final Bronze Age and, more clearly, from the beginning of the Early Iron Age, well before the first Greek colonies were founded in southern Italy (Chapter 7).

Thus this work will challenge the traditional diffusionist view, which espouses the model of the city in the western Mediterranean as an idea that was imported, along with products and goods (such as the so-called Cypro-Phoenician bowls; Fig. 1), from the superior cultures of Greece and the Near East.[10] However, opposing perspectives, which claim the priority of the West in the development of the city-state model, specifically in the early urbanism of Rome, should also be considered, albeit cautiously.[11]

In line with new perspectives and studies on Bronze and Iron Age Mediterranean connectivity,[12] this work will suggest that a combination of the traditional model of 'peer polity interaction' and the novel 'network model' be adopted in order to provide not only a new interpretative framework but also a methodology and an analytical tool with which to better understand the tensions between regional cultures (Greeks, Phoenicians, Latins, etc.) in the global Mediterranean arena, as well as local differentiations (city-states) within the regional cultures themselves.

In particular, Chapter 1 establishes the theoretical foundations upon which the following chapters are based. It is divided into three main sections. Section 1.1 outlines the current debate on the origin of the city in middle Tyrrhenian Italy, with a focus on Latium vetus. Section 1.2 discusses a number of theoretical models of social evolution, ranging from traditional evolutionary theories to the latest multi-trajectory and holistic approaches (such as heterarchy, agency and tinkering, corporate vs. network modes and chaos theory), which criticise evolutionary thinking as predeterministic, teleological, universalistic and irreconcilable with local and specific variations. Section 1.2 also considers the recent comparative approach taken by the Copenhagen Polis Centre Project and compares it with the model of social evolution elaborated by the Italian scholar Renato Peroni for pre- and proto-historic Italian communities. Finally, it illustrates the 'socio-ecological model' of urbanisation developed by John Bintliff for first millennium BC Greece,[13] which, as will be demonstrated in this work, can be fruitfully applied to middle Tyrrhenian Italy as well.

Section 1.3 suggests adopting a multi-dimensional and multi-theoretical framework, thus circumventing the sterile debate between evolutionary and anti-evolutionary perspectives. Such an approach has already been embraced by Gideon Shelach in his work on social complexity in northeast China from the fifth to the first millennium BC; in fact, a multi-dimensional theoretical perspective 'has the potential of arriving at a much more complex reconstruction of social systems and a comprehensive understanding of social processes',[14] which are multi-faceted and sometimes contradictory in their own right.

Chapter 2 begins with a discussion of the geographical context under study: Latium vetus. Section 2.1 illustrates the geographical, morphological and geological characteristics of the area in the wider context of central Italy; defines the limits of the region, which is a debated topic in itself; and discusses the nature of settlement organisation in Latium vetus. Section 2.2 provides a review of archaeological research in Rome and Latium vetus since the end of the nineteenth century and offers an overarching view of the foundational studies on which this work is built. Section 2.3 examines the nature of the data collected and used at both the territorial and regional levels; it also discusses possible biases that might affect the analyses and that have to be taken into account in their interpretation. Finally, Section 2.4 considers methodological and theoretical issues, currently debated in relation to the application of spatial analyses and locational models, specifically with reference to geographical information systems tools, which have been adopted in this work.

Chapter 3 discusses new evidence, provided by recent excavations in the historical and archaeological centre of Rome, in combination with previous studies in order to reassess, from an archaeological point of view, the evolution of Rome from a small Bronze Age village to the great city of the Archaic Age, while also taking into consideration the current debate on the origin of the city. This redefinition of the city's development will then be compared with the analysis of settlement patterns at both the territorial (*ager Romanus antiquus*, Chapters 4 and 5) and regional (Latium vetus, Chapter 6) levels.

According to ancient authors, the *ager Romanus antiquus* (old Roman domain) was the most ancient territory of Rome, prior to any conquest, and was identified by a boundary marked by a series of sanctuaries located at about five to six Roman miles (between ca. 6 and 9 km) on a few main roads leading from the city. Chapter 4 discusses the extent and chronological evolution of this territory, comparing results from the traditional literary approach with new theoretical approaches, based on the analysis of the archaeological evidence.

The location of sites will be analysed in relation to environmental variables (geology, altitude, slope and distance to modern rivers), at both the territorial (Section 5.3) and regional (Latium vetus, Section 6.2) levels, in order to identify settlement location patterns. In addition, the hierarchies of settlements will be examined, again at both the territorial (Section 5.4) and regional (Sections 6.3, 6.4 and 6.5) levels, by applying spatial and locational analyses such as the rank-size rule, spatial efficiency model, central place theory and Voronoi diagrams, in order to identify socio-political trends and territorial dynamics.

Chapter 7 integrates the settlement dynamics identified at the local (Rome), territorial (*ager*) and regional (Latium vetus) levels with a number of other trajectories of social evolution elaborated by analysing different types of archaeological evidence: settlement centralisation, funerary evidence and social organisation, economy, craft specialisation, ritual and cult places, ethnicity and identity, land evaluation and vegetation history (Section 7.2). A comparison of several such trajectories (Section 7.3) will highlight specific, eccentric and even contradictory paths of development but will also enable us to identify general patterns of change and points of convergence of several trajectories, which mark specific steps towards higher complexity ('conjunctions' of social evolution, according to the definition of Gideon Shelach; see Section 1.3).[15]

Subsequently, the socio-ecological model developed by Bintliff for the evolution of the city-state in Greece during the first millennium BC[16] will be applied to Latium vetus. Thus this work will provide a possible explanation for the unresolved question of how and why, by the end of the Final Bronze Age and the beginning of the Early Iron Age, small dispersed villages were abandoned in favour of large nucleated and centralised settlements on tuff plateaux (so-called proto-urban centres); by the mid-eighth century BC these settlements had started to show incipient urbanisation, which was completed by the seventh to sixth century BC (Section 7.3).

Finally, the network model will be introduced, not only as a useful theoretical framework but also as an analytical tool for the study of urbanisation in middle Tyrrhenian Italy and the Mediterranean in general, which will allow us to circumvent the old debate between exogenous and endogenous perspectives.[17] In particular, it will be shown that both the traditional diffusionist model, which considers the idea of 'city' to have been imported from the East to the western Mediterranean via Greek and Phoenician colonists,[18] and a new approach, which advocates an earlier elaboration of the city-state model in the western Mediterranean, as attested, for example, by the early foundation of Rome around the mid-eighth century BC,[19] have to be reassessed in the light of new research and novel perspectives on Mediterranean 'connectivity'.[20]

To conclude, this work will explore settlement dynamics in Rome (Chapter 3), its territory (Chapters 4 and 5) and its region (Chapter 6) by analysing archaeological evidence from recent excavations conducted in the centre of the city; survey data from a sample area, recently intensively surveyed, in the immediate surroundings of the city; and settlement data (known both from surveys and excavations) from the whole of Latium vetus. The geographical context, the nature of the data and methodological and theoretical issues will be discussed, in particular, in Chapter 2.

This study of settlement dynamics, conducted at three levels of analysis – Rome, its territory and Latium vetus – will then be integrated with several other approaches to social evolution in the same region, based on different types of archaeological evidence and interpreted in the light of a number of theoretical models (Chapter 7), whose foundations are established at the beginning of this work (Chapter 1).

In this way the research presented here aims to demonstrate that (1) clear signs of urbanisation can be detected in Rome by the mid-eighth century BC; (2) trends towards higher social complexity and settlement centralisation, which led to this fundamental threshold, have their roots in processes already evident in the Final Bronze Age, if not earlier; and (3) these phenomena (in particular settlement dynamics at the regional level) show a marked acceleration by the end of the ninth century BC, much earlier than the appearance of the first colonies in southern Italy. By highlighting these early local and autochthonous developments leading to higher complexity, this work will challenge the traditional diffusionist theory and will demonstrate that urbanisation and state formation in middle Tyrrhenian Italy were probably 'entangled' with,[21] but certainly not 'triggered' by, external influences from the eastern Mediterranean.

Further research drawn from this work would entail measuring the level of these entanglements. In line with a number of traditional and current developments in British scholarship, it will be suggested that concepts such as 'peer polity interaction',[22] 'mediterraneanisation',[23] 'connectivity'[24] and 'networks'[25] provide a more balanced approach to understanding local and networked contributions to political changes, both among neighbouring regional entities and more widely within the Mediterranean basin.

ONE

URBANISATION AND STATE FORMATION IN MIDDLE TYRRHENIAN ITALY: HISTORICAL QUESTIONS AND THEORETICAL MODELS

1.1. THE ORIGIN OF THE CITY IN MIDDLE TYRRHENIAN ITALY

The different perspectives on urbanisation in middle Tyrrhenian Italy espoused by the principal schools of thought known as 'exogenous' and 'endogenous' can be better appreciated if we consider how the two traditions interpret the same Early Iron Age settlement evidence found on the tuff plateaux of Etruria and Latium vetus, which were later occupied by the cities of the Archaic Age. During the late 1960s, 1970s and early 1980s a series of surveys and topographic explorations were conducted in central Italy as a result of growing urbanisation and agricultural mechanisation.[1] This research revealed a number of Bronze Age and even more numerous Early Iron Age pottery deposits on the tuff plateaux, which went on to be urbanised in the Archaic Age. These scatters of pottery (so-called sites) were interpreted by scholars in radically different ways. For example, on the basis of a survey conducted in the territory of Veii, John Ward Perkins interpreted the various Early Iron Age deposits found on the plateaux as 'different settlements' or 'separated hamlets' belonging to independent communities.[2]

According to him, those settlements came together as an incipient urban community only after the Early Iron Age ended, during the Orientalizing and Archaic Ages, via a 'synoecism' triggered by external influences, such as the new city-state model introduced to southern Italy by the recently founded Greek colonies. Ward Perkins's interpretation has been generally accepted by scholars of the exogenous perspective. It was confirmed, according to its supporters, by the presence of several Early Iron Age cemeteries, presumably each belonging to a different community, discovered and excavated around the tuff plateaux of many Etruscan and Latin first-order settlements.[3]

By contrast, scholars, who adopted an endogenous perspective and emphasised local developments leading to urbanisation, interpreted the same scatters of Early Iron Age pottery on the big plateaux later occupied by Archaic cities as evidence of 'unitarian' or 'nucleated' large settlements. These settlements, defined as 'proto-urban' centres (not yet cities but with the potential to become so), would have been inhabited by an homogeneous community, or at least by close-knit groups, at an advanced stage of unification, well before the appearance of the first colonies in southern Italy.[4] In addition, according to these scholars, dramatic changes in the settlement organisation were evident in middle Tyrrhenian Italy by the Late Bronze Age (or the very beginning of the Early Iron Age), much earlier than the arrival of the first Greek colonists.[5]

In fact, recent surveys and topographic research have shown radical changes in settlement patterns between the Final Bronze Age and the beginning of the Early Iron Age. Several studies have noted (1) a dramatic decrease in the total number of settlements; (2) the abandonment of many small, dispersed Bronze Age villages located in open positions or on small hilltops (generally less than 2–3 hectares,[6] with an average of 5–6 ha and a few settlements between 10 and 20 ha); (3) and the beginning of a generalised occupation of the big plateaux that were later occupied by Archaic cities (generally ranging from a minimum of 20–25 ha, particularly in Latium vetus, to a maximum of 180–200 ha in southern Etruria).[7]

According to scholars adopting the endogenous perspective, these changing patterns in the settlement organisation clearly point to settlement nucleation and centralisation, which is one of the premises of urbanisation.[8] While the exogenous perspective seemed to dominate during the 1970s and early 1980s, in the subsequent decades the endogenous point of view started to emerge. In particular, a series of surveys conducted on several plateaux of both Etruria and Latium vetus showed that the scatters of pottery, generally identified as separated hamlets, were widely and almost evenly distributed throughout the plateaux, generally separated by small distances (a few tens or hundreds of metres), not sufficient to be interpreted as independent communities.[9] In fact, as conceded even by scholars who generally espouse the theory of 'separated hamlets', such limited distances imply at least some sort of common strategy and collaboration between these domestic units, dwelling in the same limited and defined space and exploiting the same land.[10]

In line with this argument, it has been suggested that the numerous Early Iron Age cemeteries around these plateaux did not belong to different, independent communities, but were funerary areas for different social and/or political groups or sub-divisions within the same community – for example, family groups, lineages, *gentes* or *curiae*.[11] It has also been noted that Bronze Age villages often had several funerary areas, but no one has challenged the unitary nature of those settlements.[12] However, recent examination of looted funerary areas around the plateaux of Crustumerium has revealed that this settlement is surrounded entirely by funerary areas (Francesco di Gennaro, personal communication).

This evidence suggests, as in the case of other Early Iron Age Etruscan and Latin settlements, that so-called necropoleis or cemeteries were distributed in a sort of circular arrangement around the plateaux[13] and should rather be seen as 'burial areas', being part of a continuous buffer zone around the inhabited area. This buffer zone would be reserved for funerary use and other extra-mural functions, serving as the site of military and religious offices, underworld and liminal cults and temporary or permanent residences for foreigners. Giovanni Colonna has identified a similar buffer zone around Rome, marked by a line of sanctuaries located at the first mile from the Servian Wall and mostly dating back archaeologically to at least the Archaic Age. He compares this area to the *proastion* of many Greek cities.[14] As already mentioned, different funerary areas within this buffer zone might have belonged to different and 'competing' social and/or political groups or sub-divisions within the same settlement.

The long-standing debate between 'exogenous' and 'endogenous' perspectives is ongoing,[15] and there remain many other unresolved issues, such as (1) the supposed priority of urbanisation in Etruria as compared with nearby regions, such as Latium vetus;[16] (2) how and especially why, within the limited time scale of a few generations, settlement organisation changed so radically in both Etruria and Latium vetus at the end of the Bronze Age and the beginning of the Early Iron Age, and people moved from widely scattered and dispersed villages in open positions or on small defended hilltops to large nucleated settlements on big plateaux, which later grew into cities.

This book explores settlement dynamics in Rome, its hinterland and Latium vetus, and integrates the results of these analyses with other trajectories of social evolution which are analysed using different types of archaeological evidence (multi-dimensional approach).[17] It combines traditional evolutionary theories with more recent multi-trajectory and comparative perspectives (multi-theoretical approach) to address these questions in light of the wider debate between the exogenous and endogenous schools. The following sections of this chapter illustrate the theoretical foundations of analysis and interpretation of data which will be presented in subsequent chapters.

1.2. APPROACHES TO URBANISATION AND STATE FORMATION FROM A COMPARATIVE PERSPECTIVE

Evolutionary Approaches

In the development of human cultural systems, the trend from simpler and smaller to larger and more complex communities started at least 100,000 years ago, and while the formation of cities and states occurred at different times in various parts of the world, it can be said to have really begun only in the past 5,000 years. Urbanisation is generally considered to be the most radical development of the pre-industrial era since the transition to agriculture.[18] Starting with the groundbreaking works by Edward Burnett Tylor[19] and Lewis Henry Morgan[20] in the second half of the nineteenth century, the evolution of complex societies has been a dominant theme of social evolutionary studies in the field of anthropology.

Collating a great amount of new information on non-Western people collected by missionaries, travellers, colonists and nascent ethnographers, Morgan and Tylor divided cultural development into three basic consecutive and progressive stages – savagery, barbarism and civilisation – assigning certain characteristics to each stage. Tylor's and Morgan's works, based on the assumption of cross-cultural similarities, were criticised by Franz Boas,[21] who focused on the individuality of cultures and emphasised local geographical and historical contexts.[22]

However, archaeology had by then demonstrated its capacity to investigate the evolution of complex societies. In fact, given its temporal depth (long-term perspective) and broad geographical distribution (almost the entire globe), archaeology was able to provide an immense amount of material for studying the origin of complexity in society both diachronically and synchronically. The debate on social evolution thus shifted from anthropology to archaeology.[23]

Despite Boas's criticisms, by the middle of the twentieth century Leslie White and Julian Steward revived the evolutionary model. Steward proposed a model with levels of increasingly complex socio-cultural integration (family, band, folk society and state) and applied it to many parts of the world.[24] White, by contrast, was interested mainly in universal patterns, and in his model he emphasised the impact of technological progress and the development of economic systems for capturing energy in the evolution of social and political complexity.[25]

At the same time, evolutionary perspectives were prominent in works on pre-historic societies and the origin of complexity by Gordon Childe, whose original cultural-historical approach (diffusionist model)[26] had been greatly influenced by Friedrich Engels's ideas after his visit to the Soviet Union in 1934.[27] White and Steward's pupils – Elman Service,[28] Morton Fried[29] and Marshall Sahlins,[30] who worked during the 1960s and 1970s (neo-evolutionists) – combined White's general model with the multi-linear, specific evolution of Steward and developed alternative wide-ranging models which could be applied to specific cultural contexts. Service and Sahlins proposed a model based on different levels of social integration (band, tribe, chiefdom, state), while Fried developed a model that focused on the organizing principles of political organisation (egalitarian, ranked, stratified and state society), which were derived from cross-cultural comparisons of social status, access to resources and the organisation of power in different societies.[31]

Another key neo-evolutionary work was Flannery's paper on the rise and collapse of complex societies and his account of the search for 'prime movers'.[32] As Yoffee points out,[33] Flannery, who adopted a complex systems approach, suggested that one should measure social complexity according to the amount of 'segregation' (social differentiation) or 'centralisation' (social integration) present in a given society. Social evolution progressed through mechanisms of 'promotion' (when innovation is introduced to the general system by lower-order sub-systems) or 'linearisation' (when a centralised authority bypasses local authority and influences lower-order sub-systems).[34]

Thus states were the result of a long process during which a dynamic equilibrium was achieved between promotion, prevailing 'centralisation' and 'linearisation'. When linearisation and promotion deteriorate into pathologies (when authorities 'meddle' in stable centralised systems or when lower-order sub-systems 'usurp' the general interests), the result is a 'hyper-coherence' system. If adaptive strategies cannot overcome sub-system stresses and pathologies, the failure of one part affects all other parts of the system and can lead to the collapse of the entire system.[35]

Table 1 presents the model of social evolution from band to state organisation elaborated by Elman Service and presented in Colin Renfrew and Paul Bahn's more recent synthesis; it also describes the main features of the economic organisation, settlement pattern, architecture and religious organisation for each evolutionary stage. In order to explain how change occurred from one hierarchical level to another under different environmental and human conditions, the neo-evolutionists required a comparative method, which was provided by Henry T. Wright and his student Gregory A. Johnson in the early 1970s. These scholars developed a model in which state organisation occurs when a society is based on a hierarchy with at least three levels of decision making. They then analysed survey data from the Susiana plains of southwest Iran, assuming that at least three tiers of settlement within one system represented an underlying administrative structure with at least three levels of hierarchy.[36]

Multi-Trajectory (Anti-Evolutionary) Approaches

Evolutionary approaches based on the assumption of cross-cultural similarities have been criticised by scholars who prefer to stress the individuality of cultures and emphasise local geographical and historical contexts.[37] Most current scholarship tends to reject evolutionary perspectives as being incorrectly based on directional and teleological biases.[38] In particular, evolutionary approaches have been accused of viewing human pathways to complexity as unilinear, teleological growth, where all sub-systems (polities, social organisation, economy,

Table 1. Classification of societies according to Service's model of evolution

	Band,	Segmentary society,	Chiefdom,	State,
	<100 individuals	ca. 1,000 individuals	5,000–20,000+ individuals	20,000+ individuals
Social organisation	Egalitarian, informal leadership	Pan-tribal association; raids by small groups	Kinship-based ranking under hereditary leader; high-ranking warriors	Class-based hierarchy
Economic organisation	Mobile hunter-gatherers	Settled farmers; pastoralist herders	Central accumulation & redistribution; some craft specialisation	Centralised bureaucracy; tribute-based; taxation; laws
Settlement pattern	Temporary camps	Permanent villages	Fortified centres; ritual centres	Urban cities, towns; frontier defences; roads
Religious organisation	Shamans	Religious elders; calendrical rituals	Hereditary chief with religious duties	Priestly class; pantheistic or monotheistic religion
Architecture	Temporary shelters	Permanent huts; burial mounds; shrines	Large-scale monuments	Palaces, temples & other public buildings
Archaeological examples	All Palaeolithic societies, including Palaeo-Indians	All early farmers (Neolithic/Archaic)	Many early metalworking & formative societies; Mississippian (US); smaller African kingdoms	All ancient civilizations, e.g., Peru in Mesoamerica, Near East, India, China, Greece, Rome
Modern examples	Eskimo, Kalahari Bushmen, Australian Aborigines	Pueblos, Southwest US, New Guinea, Highlanders, Nuer & Dinka in East Africa	Northwest coast Native Americans; 18th-century Polynesian chiefdom in Tonga, Tahiti, Hawaii	All modern states

From Renfrew & Bahn 2004, p. 179.

ideology, etc.) are seen as fixed containers evolving rigidly as separated and independent entities.[39]

Conversely, it has been observed that evolution can have multiple, even contradictory, trajectories; these trajectories can be subjected to circumstantial (or 'conjunctural') events caused by both natural and human agents, and they can pass through different stages at different times, and can also collapse.[40] Therefore, new holistic approaches focused on heterarchical power dynamics, multi-dimensional evolutionary trajectories, network perspectives or chaos theories have been pursued.

The concept of heterarchy has been introduced to the study of complex societies by Carole L. Crumley.[41] This scholar defines heterarchy as 'the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways'.[42] To illustrate this concept she uses an example of three cities of similar size, which might derive their importance from three different elements: one might host a military base, one might be a productive centre and the third might have a famous university.[43]

Crumley borrows approaches such as chaos theory and self-organisation systems from physical and biological sciences to explain the relationship between agency and circumstantial constraints (environmental, economic, ideological, etc.), which may play a role in cultural evolution. Evolution is chaotic in nature (dynamic systems always have unpredictable aspects); however, in the broader search for order, certain opportunistic organisms show an order-oriented behaviour (self-organised systems) in which the control of information flow is always key in the management of power.[44]

In the tension between chaotic dynamic evolution and the quest for order, self-organised systems tend to follow cycles of occurrences ('attractors'), which reveal a pattern of regularity (and therefore predictability), even when they appear to be completely a-periodic and unexpected ('strange attractors'; e.g., a hurricane).[45] This combination of chaotic evolution, cyclical and a-periodic occurrences and an emphasis on decision-making centres, as well as on the connections and flow of information among them, seems to suit the dynamics of cultural evolution very well and summarises the major contribution of heterarchical thinking to social evolutionary theory.

To conclude, Crumley does not deny that hierarchy can characterise power relations in some societies, but she claims that there are other ways in which a society can be organised, where power is shared or checked, as in coalitions, federations, and the like. Crumley considers the hierarchy–heterarchy relationship to be particularly powerful, because it allows variations in time and scale: a society might move from a heterarchical condition to a more hierarchical structure and vice versa, or it might be hierarchical at one level (senior counsellors of the state) and heterarchical at another level (members of a club and/or professional association).[46]

Table 2. Trajectories of development observed cross-culturally in the evolution of complex cultural systems according to Haas

Trajectory	Specification
Development of technology	Increased harnessing of energy
Settlement nucleation and urbanization	Aggregation of mobile bands of hunter-gatherers into villages, towns and cities
Alliance formation and increasing social integration	General trend towards progressive formation of social alliances between different political, residential and kinship units and increasing complexity of this form of social integration
Development of social hierarchies	General trend from egalitarian, non-hierarchical social formations to class societies
Centralisation and evolution of power	General trend towards increasing centralisation and restriction of power to a limited segment of the society (elites) on the basis of economic, ideological, physical or political power
Craft specialisation and increased division of labour	General trend from little specialisation and simple division of labour along age and sex lines towards increased specialisation in goods production and services, as well as division of labour along many lines beyond age and sex
Ethnic differentiation	Historically documented global trend towards separation into different ethnic groups
Emergence and evolution of war	Appearance of war, as organised violence between political units, at different times in different cultures around the world; subsequent cross-cultural changes in the nature of war
Formation of multi-ethnic polities	Tendency of earlier polities (from tribes to states) to be ethnically homogeneous (by language, customs, material culture, etc.); tendency of later polities to include different ethnic groups living together under a single centralised government

Based on Haas 2001, pp. 16–17.

As previously discussed, there are two main problems in the study of cultural evolution: firstly, establishing the correct relationship between constraint variables (environmental, economic, ideological, etc.) and human decision making; and secondly, combining specific and localised (both spatially and temporally) evolutionary trajectories with more general cross-cultural and cross-chronological patterns.

The approach proposed by Haas implies a more explicit consideration of human agency, which he defines as ‘the actions of individual human actors in a social system’, and the adoption of the ‘tinkering’ view of evolution.[47] According to this scholar, a series of common trajectories towards higher complexity can be observed cross-culturally: technological progress; increasing settlement aggregation and social integration; development of social hierarchies; power centralisation; craft specialisation and increased division of labour; ethnic differentiation; and so on (see Table 2).

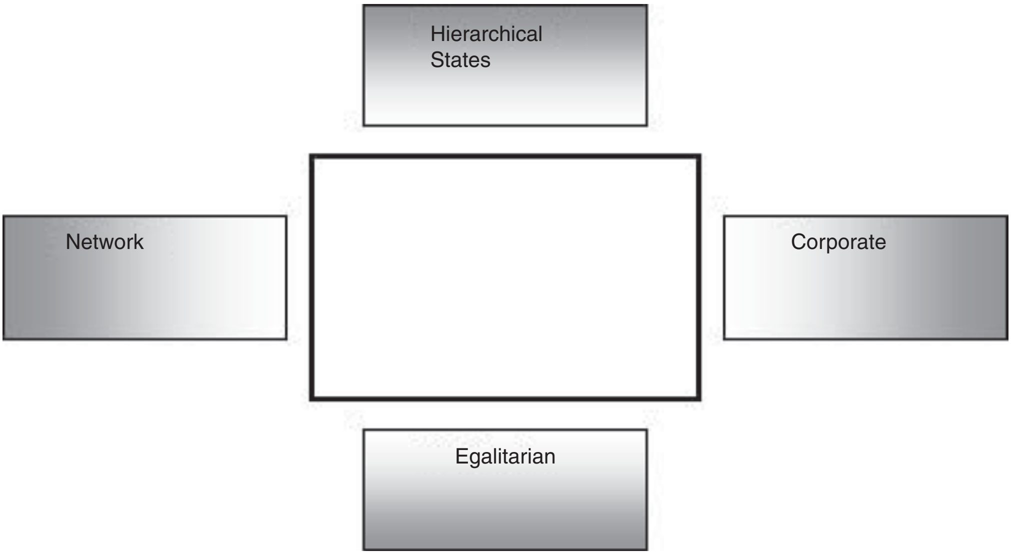
However, it is important to note that Haas believes there was no implicit idea of 'progressive' evolution in the development of these trajectories, even though some recurrent evolutionary patterns can be detected cross-culturally in the temporal sequence of many historical societies.[48] In fact, evolution proceeded principally by 'tinkering' or *bricolage* work, in which the final product was created by the modification of 'whatever was at hand' and by its adaptation for a new use or purpose.[49] As Haas himself explained:

> Thus, for example, the decision of people to agglomerate into villages may be seen in any given historical sequence as an example of local-level tinkering. It is one option people may pursue in an effort to resolve particular problems such as threats from enemies, need for communal storage, enhanced communication, or localized water resources. Other people in that same area or region may not choose to move into villages and retain their isolated farmsteads. Depending on the relative success of the aggregation strategy/option under the particular historical circumstances of the time, the village pattern may or may not spread throughout the region. Based on global records, the village option was clearly successful and has been selected by small groups of people at many different times and places.[50]

Another approach, which rejects a monolithic notion of hierarchy and cultural evolution and recognises different and divergent pathways to complexity, is the perspective of 'corporate' versus 'network' mode adopted by Gary M. Feinman.[51] The journey from an egalitarian to a hierarchical society can be followed through different paths of increasing complexity, which can take very different forms and expressive modalities such as corporate modes or, by contrast, network modes (Fig. 2).

As Feinman himself emphasised, this view recalls and parallels Colin Renfrew's distinction between individualising and group-oriented forms of chiefdoms. For Renfrew, group-oriented polities tended to hide differences in access to personal wealth and emphasised kinship relations, communal ideologies and group rituals. Materially this attitude was reflected in scarce displays of personal wealth (no exceptional burials) and great emphasis on collective labour, as exhibited in community infrastructures and monumental public architecture (e.g., Neolithic Malta and henge-building people of Europe in the third millennium BC). By contrast, individualising forms tend to emphasise economic differentiations and social hierarchy: elites display their wealth in sumptuous burials, live in big houses, monopolize prestige goods and their exchange and often control elaborate specialised craft production (e.g., Minoan-Mycenaean Greece). Not surprisingly, in these individualising mode polities, communal ritual and public creation appear to be of lesser importance.[52]

As shown in Table 3, according to Feinman, the possible paths from an egalitarian organisation to an increasingly complex and hierarchical society can



2. Comparative axes of variability between corporate and network modes of social organization. (After Feinman 2001, fig. 1, p. 152.)

Table 3. Corporate versus network modes of cultural/social evolution

Corporate	Network
More even wealth distribution	Concentrated wealth
Shared power arrangements	Individual power
More balanced accumulation	Ostentatious consumption
Control over knowledge, cognitive codes	Prestige goods
Corporate labour systems	Patron–client factions
Emphasis on food production	Attached specialization
Staple finance	Wealth finance
Monumental ritual spaces	Princely burials
Segmental organisation	Lineal kinship systems
Power embedded in group association/ affiliation	Power inherited through personal glorification
Symbols of office	Ostentatious elite adornment
Broad concerns with fertility, rain	Personal glorification

From Feinman 2001, table 2, p. 160.

have differing forms and expressive modalities. These range from corporate modes, emphasizing communal ritual, public construction, food production, large cooperative labour tasks, power sharing and nonlinear inheritance of rulership, to so-called network modes, which place high value on personal prestige, wealth, power accumulation, highly individualised leadership, the exchange of prestige goods, exotic possessions, princely burials and the specialised manufacture of status-related craft goods.

According to Feinman, corporate and network modes are not mutually exclusive or directly linked to different stages of cultural evolution. On the contrary, they generally coexist in the political dynamics of all social arrangements and may be represented by a comparative axis of variability. As shown in Figure 2, in Feinman's view, corporate and network modes are cross-cutting or orthogonal to the familiar dimension of complexity or hierarchy. Historically it is often attested that one or the other mode dominates in a specific region at a specific time. However, the singular significance of each mode may vary in a single region over time.[53]

The traditional evolutionary approach and the abstract category of 'chiefdom' have been strongly criticised and rejected by Yoffee in his work *Myths of the Archaic State* (2005). According to this scholar, the evolutionary approach, in which the development of humanity entails the socio-political stages of band, tribe, chiefdom and state, is absolutely misleading when describing a holistic and massive evolution that never actually occurred in historical reality. It is true that all social institutions (politics, economy, social organisation, belief systems) are linked to one another, but it is not true that they all changed massively, at once and at the same time, in the same direction.[54]

Additionally, Yoffee noted that the concept of chiefdom is abstract and an artificial construction which is used in the archaeological literature to indicate both socio-political organisations, which never evolved into states, and political formations, which preceded the formation of the state. Similarly, ethnographic and pre-historic examples have shown that chiefdoms do not necessarily precede the development of the earliest states; they can equally represent alternative trajectories to it.[55]

The essence of state formation, according to this scholar, can be described as a process of 'differentiation' of social groups from one another (so that specific activities, roles, identities and symbols become attached to them) and their 'integration' into an institutionalised political framework.[56] All of these processes are performed by means of 'power', which, according to Yoffee, is not 'an abstract quality of social types, but the means by which leaders attempt to control the production and distribution of goods and to manage labour'.[57]

Economic power (based in the early state on agricultural production and mercantile activity), social power (executed by different groups that arose from the horizontal and vertical segmentation of society) and political power (the ability to impose centralised force through specialised, permanent administrators, including a military organisation) and their reciprocal reinforcement constitute the essence of the state, which did not evolve unless all these forms of power were simultaneously achieved.[58] Therefore, the best way to understand early states is to study the tensions and interaction mechanisms between these three types of power and to analyse rival dynamics between the competing social groups and between their leaders. In particular, cities were the central arenas where these processes of differentiation, integration and social struggle occurred, and urbanisation is one of the essential features of early state formation.[59]

Yoffee explains the general evolution of human civilisations as following different, though parallel trajectories, which in different parts of the world led different peoples through different paths, from a common base of 'bandishness' (i.e., the general social and economic condition of societies dependent on hunting, fishing and gathering) to several forms of social inequality and power growth.[60] According to him, after the Pleistocene, different evolutionary trajectories of state formation occurred in different parts of the world with different dynamics, but basically by means of access to goods and labour.[61] In explaining the dynamics and mechanisms of this evolution, Yoffee disregards the corporate–network distinction as a rigid categorization used to inflexibly define different societies at different stages of their evolution; he considers the concept of 'heterarchy' to be no more than a useful concept for defining and studying many conflicting hierarchies in the same society, rather than the basis of a full-blown theory.[62]

In his analysis of the evolution of Mesopotamian states, Yoffee refers to the theory of 'complex adaptive systems' elaborated and developed by the Santa Fe Institute.[63] Yoffee's description of a complex adaptive system is quite useful:

> A complex adaptive system is a network of interacting parts that exhibits a dynamic aggregate behaviour. This system behaviour cannot be reduced to the 'sum of its parts' because the action of some parts is always affecting the action of other parts, so that the equilibrium of the entire system is never reached or maintained for very long.… Such complex systems cannot be calculated or predicted through standard mathematical descriptions because their operations are not fixed within a few variables and controlled by some central process or mechanism. Rather aggregate- or emergent- behaviour derives from interactions, which themselves continuously change internally, and because many systems are in contact with one another and so affect the landscape of all of them. Indeed it is often difficult to specify the boundaries of a system.… The natural property of complex adaptive systems is that of 'self-organisation' (or 'self-organized criticality') and it is the internal dynamics of such systems, not only their response to something external, that can occasion rapid and profound change.[64]

In Yoffee's view, it is not that important to define whether a society is complex or not; rather it is worth using the theory of complex adaptive systems to investigate the ways in which a society is complex. This will advance our investigation of early states and societies and greatly improve our knowledge of early states and ancient civilization.[65]

Using the Mesopotamia case study, Yoffee elaborates a 'growth' model which explains the development of early states, with particular attention to power dynamics and relationships between social actors. According to this model, original villages persisted as simple political and economic organisations for a very long time (thousands of years), but within them social roles and identities evolved and changed significantly. Through the circulation of goods and marital partners within the village system, unrelated people built institutionalised connections among themselves.

Villagers of the same centre, at both the regional and supra-regional levels, shared symbols and beliefs (reflected by common features in the material culture) which identified and differentiated one civilization from another (sometimes sharing single elements at the supra-regional level). A few individuals (nascent elites) restricted access to the production of symbols and their means of communication, such as ceremonies, feasts and rituals, and acquired more and more power through their exclusive control over ideology.[66] At some point, cities crystallized suddenly and rapidly, like a supernova explosion, to use Yoffee's analogy.[67] This 'phase transition'[68] in the Mesopotamian context is described by Yoffee as follows:

> In Mesopotamia villages that were centres of production and exchange, that were located on trade routes and /or rivers, that lay near great agricultural land, seats of temples and regional worship, and that were defensible locations from attacks by neighbours – for hundreds or thousands of years – suddenly became cities, as people from the countryside increasingly moved into them.[69]

As will be shown in 'The Nature of Settlement Development in Latium Vetus' in Section 2.1 and 'Settlement Centralisation' in Section 7.2, those features identified by Yoffee as typical of early urban formation in Mesopotamia also occur with similar patterns in early urban formation in middle Tyrrhenian Italy. As suddenly and rapidly as in Mesopotamia, over the course of a few generations – by the end of the Final Bronze Age and the beginning of the Early Iron Age – small pre-urban villages are replaced by large proto-urban centres, by means of a revolutionary process in Etruria and more gradually in Latium vetus.

A common feature of all these models is the attempt to introduce individual decision makers as catalysts of change (human agency) alongside the more traditional constraint variables (environmental, economic, ideological, etc.). Similarly, all those theories put great emphasis on the flow of information within and among the cultural systems, which is considered the ultimate source of power.[70]

Recent Comparative Approaches: The Copenhagen Polis Centre Project

The Copenhagen Polis Centre is a research organisation that was set up by the Danish National Research Foundation (1993–98) to study the institution of the *polis* and the concept of the city-state. The project was completed with the collaboration of scholars from many countries, specialists in different regional archaeologies in several historical periods. It had two primary aims, the results of which appeared in a series of publications, including papers, conference proceedings, edited books and monographs.[71] Firstly, it aimed to produce an inventory of all known archaic and classical Greek *poleis*, including colonies attested in contemporary sources, exploring and comparing at the same time what ancient people thought a *polis* was and how modern scholars define the *polis* and the city-state.[72] Secondly, it aimed to review all societies in world history organised as city-states and to highlight similarities and differences among them, in order to suggest a reinterpretation of the concept of city-state.[73]

An important theoretical reference for the project was Max Weber's *Die Stadt: Eine Soziologische Untersuchung* (The city: a sociological study) published posthumously in *Archiv von Sozialwissenschaft und Sozialpolitik* (*Sociological Sciences and Socio-Politics Archive*, 1921). As pointed out by Mogens Herman Hansen, Weber's *Stadtgemeinde* (municipality) should have the following five characteristics: (1) defensive circuit; (2) market; (3) laws and law courts; (4) political decision-making focus; and (5) at least partial autonomy.

In particular Hansen emphasises Weber's concept of the city as a nucleated centre and, also referring to subsequent elaborations of the concept, summarises the following criteria for considering a nucleated settlement a city: (1) a population of some size; (2) dense settlement of the population in permanent dwellings; (3) specialisation of functions and division of labour; (4) a market economy; (5) a more institutionalised form of organisation than required by dispersed settlement (i.e., beyond the stage of a face-to face community); and (6) the settlement as the social, economic, religious and military centre of its immediate hinterland.[74]

Defined as such the city-state according to Hansen is not limited to the strict concept of the Greek city-state, the *polis*, but represents a more inclusive model, which can be recognised in several historical contexts. The Copenhagen Polis Centre's review of historical examples, according to Hansen, suggests that urbanisation and state formation go hand in hand, and at least seem to coexist in all civilisations in which written sources supplement the archaeological evidence. When the relationship between state and urbanisation is one-to-one, this is a proper 'city-state' or 'micro-state', with a relatively small territory.

When a whole region is split up into city-states, with an hegemonic urban centre (city-state), secondary minor centres, but also other smaller urban centres (city-states) independent of the principal one in a federation or some sort of hierarchical system, Hansen suggests adopting the term 'city-state culture'. City-state cultures often appear in neighbouring regions (e.g., the Etruscan and Latin city-state cultures) and eventually evolve into an 'empire' with an hegemonic capital.[75]

Building on the Weberian ideal type, as well as a comparison of the concept of *polis* in ancient sources with its reflection in the archaeological evidence, Hansen suggests adopting checklist definitions of city-state cultures and city-states in order to include or exclude historical examples in the investigation of the Copenhagen Polis Centre. The concept of *polis* extrapolated by the Centre from literary sources and from archaeological evidence and its original interpretation expressed in the concepts of city-states and city-state cultures are summarised in Tables 4, 5 and 6.

Two aspects of the research conducted by the Copenhagen Polis Centre are particularly relevant to this work: (1) the review of city-states and city-state cultures included two city-state cultures from central Italy (namely, Etruria and Latium vetus),[76] which had generally been excluded from previous comparative studies on city-states (urbanisation in middle Tyrrhenian Italy having previously been regarded as a 'secondary' phenomenon in a 'peripheral' region of the Mediterranean); and (2) the city-states investigated by the Copenhagen Polis Centre were considered only in the final stages of their development – that is, the *poleis* of Archaic and Classical times.[77] Hansen admits that the origin of the city can be traced back to the eighth century BC, but he thinks that the archaeological evidence is too scanty and poor for authentic cities to be recognised at that time.[78] Moreover, he does not pay great attention to the period prior to the final establishment of the city-state, which – as shown in this work – is very important for its later development.

The Model of Social Evolution of the Roman School of Pre- and Proto-History

In contrast to the Copenhagen Polis Centre approach, the model of social evolution – elaborated by Renato Peroni, who sadly has passed away (2010) and was considered the founder of the so-called Roman school of pre- and proto-history[79] – pays great attention to the centuries immediately preceding urbanisation (proto-urbanisation), which are at the intersection of pre-history and history (proto-history). The Roman school of pre- and proto-history comprises a group of scholars of various generations who were students of Renato Peroni at the University of Rome 'La Sapienza' and developed with him some distinctive methodologies and perspectives; these continued to characterise their own work even after university, though they reflected obvious individual differences and personal interests.

According to Peroni's model (summarised in Table 7), between the late prehistoric phase (which came to an end with the Bronze Age, ca. 1700–950/925 BC) and the dawn of historical times (beginning with the Orientalizing Age, ca. 750/725–580 BC) there is a transitional period which cannot be considered to belong to pre-history but is not yet considered historical. This transitional time, which precedes definitive urban organisation but displays all the potential elements that could develop into full urbanisation, in middle Tyrrhenian Italy roughly corresponds to the Early Iron Age (950/925–750/725 BC) and is considered to be part of proto-history.[80]

Table 4. The polis in literary and epigraphic sources (urban centre) compared with the archaeological evidence (physical identity) according to the Copenhagen Polis Centre

The *polis* as an urban centre (literary and epigraphic sources combined with Weber's ideal type)		The *polis* as a physical entity (archaeological evidence)
Characteristic	Specification	Specification
Citizens and townspeople	Not all the people living in the town are citizens and not all the citizens live in the town (they may live in the countryside).	
Public space or civic space?	Apparently there is no division in ancient sources between public and civic (restricted to citizens). A more operational distinction is between sacred, public and private.	
Polis vs. *chora*	The ancient Greek city was inseparably connected with its countryside (the *polis* as state may have included the *polis* and the *chora* = town and its hinterland; at the same time the *chora* as territory may have included the same concepts of *polis* and *chora* = town and hinterland).	
Polis vs. *chora* – the settlement pattern	First-order sites (towns or cities) are easily identified in literary sources. Second-order sites (villages or hamlets) and third-order sites (farmsteads or homestead farms) are difficult to identify from specific mentions by Greek authors.	Cities and settlements have to be considered in their regional context and their reciprocal relations. It is difficult to assess territorial boundaries and hierarchies only on the basis of archaeological evidence (settlement size). Generally a 2-hour walking radius is considered the maximum acceptable distance between home and plot for a farmer.
Great and small *poleis*	There is no agreement among ancient historians on the size of 'small' cities and 'big' cities.	Archaeologically size (and density occupation) is the most pervasive of the unwritten assumptions about what constitutes a *polis* town.
Political community or urban centre	The term *polis* generally refers to a political community related to a nucleated settlement. The concept of *polis* as an urban centre (sizeable walled nucleated settlement with monumental buildings) is no earlier than the 6th century BC.	Monumental architecture has always been considered to be one of the key features of urbanisation. According to Morgan and Coulton, 'Buildings are a response to and not always necessary concomitants of the institutions and values they represent and serve' (Morgan 1997, p. 104). It is problematic to assess when architecture starts to be 'monumental' or 'public'.

The *polis* as an urban centre (literary and epigraphic sources combined with Weber's ideal type)		The *polis* as a physical entity (archaeological evidence)
Characteristic	Specification	Specification
The *polis* as a face-to-face society	According to Weber, a city is beyond a face-to-face society. This is consistent with Aristotle's account of the ideal city if we consider that a face-to-face relation concerns only adult male citizens.	Social stratification can be investigated through burials, domestic architecture and liturgies. However, one has also to take into account 'political' stratification documented by epigraphy.
The *polis* as a consumer city	In Perikles' funeral oration he praises Athens as the place where one can obtain the best products imported from all over the world.	The regular location of specialist craft activities within large settlements is a phenomenon of the 6th century or later. However, patterns of attraction (population concentration, functional need, supply points for raw materials) are variable.
Subsistence economy vs. market economy	Plato, Aristotle and even Xenophon (generally quoted in support of an opposite view) connect the sense of town inextricably with a fundamental specialisation of functions and division of labour.	Pressure of urban supply increasingly came to highlight the disjunction between town and country. Did the town function as a 'central place'? There are enough data to support this thesis only from the Archaic Age onwards (concentrations of *amphorae* or black glazed Attic pottery).
Ackerbürger (farmer-townsman)	A large fraction of a town's inhabitants were farmers who lived in the city but worked in their fields, which were sometimes far removed from the urban centre.	It is difficult to establish if Athenian 'farmer-citizens' were Ackerdörfer (farmer-villagers) or Ackerbürger (farmer-townsmen) from survey evidence. Another complicated issue is landownership (land was probably owned by the city, which means a predatory rather than a subsistence economy).
Walls	In earliest written sources the defence circuit is one of the most common characteristics of a *polis*.	9th- and 8th-century fortifications are found in the Aegean Islands and Ionia, but they seem to be more related to defensive need rather than ideological and political value.

Based on Hansen 1997b and Morgan 1997.

In particular, according to Peroni, a series of characteristics (which, following the terminology adopted in the present work, could be called 'trajectories' or 'dimensions' of social evolution), such as agricultural intensification, technological progress, craft and labour specialisation, settlement nucleation and centralisation, social stratification, accumulation of wealth and increase of exchange networks and markets, which are generally associated with full

Table 5. The concept of city-state according to the Copenhagen Polis Centre

Characteristic	Specification
Size	A city-state is a specific type of micro-state.
Territory	Generally there are few historical exceptions to a range between 10 km^2 and 3,000 km^2 (i.e., 30 km or one-day walking radius).
Population	It is often said that the city-state is a face-to-face society, but this applies only to the adult male members of the society. Therefore, the typical city-state has a four-digit and a large city a five-digit population figure; very few city-states exceed 100,000 inhabitants.
Ethnic and political identity	A city-state generally shares its ethnic identity (language, culture, religion, history, etc.) with a number of other city-states. Its political identity is instead centred primarily on the city-state itself rather than larger (ethnically based political organisations, federations, monarchies) or smaller entities (municipalities).
Name	The name of a city-state either is identical with the name of its major urban centre or is an ethnic derivative of the name of the urban centre.
Settlement pattern	Especially in mid-sized and large city-states, a substantial part and sometimes even a majority of the population may have been settled in the hinterland (villages or dispersed farms). But in a city-state the population of the urban centre constitutes a much higher percentage of the total population than in any other type of pre-industrial community.
Urbanisation	The city-state is centred on a city (= town) which is the 'central place' of the city-state territory, i.e., its religious, military, politic and economic focus.
Economy	Small city-states may have what is essentially a subsistence economy. However, even though a large part of the population may have been involved in agricultural labour, specialisation of function and division of labour (which imply market economy) are essential aspects of the economy of a city-state.
Defence	A city-state has its own army, and its urban centre is often (but not necessarily) fortified.
Government	The government of a city-state is generally highly centralised and institutionalised. It could be a democracy or a monarchy, but even in the latter case the percentage of the population involved in government is much higher than in other types of state.
Self-government	The city has to have legislative, administrative and judicial independence ('internal sovereignty'). It is not necessarily an independent state ('external sovereignty'). It could be dependent on another city-state, part of a federal central government or even part of a monarchy.
Lack of self-sufficiency	Economic self-sufficiency is emphasised by Aristotle as a desirable aspect of the ideal *polis*. But in historical reality the city-state is often characterised by a high degree of economic interaction with its neighbours.

Based on Hansen 2000b, pp. 17–18.

urbanisation are developed to their full potential in the course of the proto-urban period (Early Iron Age), but their origins date back to well within the Bronze Age. More specifically, Peroni identified 'preparatory developments'

Table 6. The concept of city-state culture according to the Copenhagen Polis Centre

Characteristic	Specification
Regional homogeneity	There is a common language and a common culture.
City-state organisation	Singular independent communities: communication between these units may be by land or sea or both.
Prime mover	Often urbanisation and state formation take place almost simultaneously in a period of demographic and economic upsurge.
Emergence	Gradual, imperceptible formation, generally preceded by a pre-state period of colonisation, generally implies the founding of city-states. The decline of an urbanised macro-state may result in the formation of small independent city-states.
Inter-city-state organisation	No single polity is so dominant that it is able to unite the region into a single nation (although there are examples of 'capitals' controlling other dependent city-states). They are not always 'peer polities', but there may be hierarchical systems of polities (there may be hegemonic, independent and dependent polities).
War	War between city-states is endemic but, at the same time, there is always considerable economic, religious and cultural interaction across all frontiers.
Federal organisation	In times of peace, city-states interact politically by conducting close diplomatic relations, by forging alliances, and by forming leagues or federations, often of a hegemonic type (in this case dependent city-states are self-governing but refer to the hegemonic centre for foreign policy and defence, and they pay maintenance and military tributes).
Urbanisation and citizenship	There is often a distinction between insiders (citizens) and outsiders (foreigners and slaves); citizens were a privileged group who inhabited the city and its territory.
Disappearance	A city-state can disappear when it is destroyed: there is an end, both physical and political, of the city. The city-state becomes a city because it is subsumed by a neighbouring 'great power'.
Clusters	City-state cultures appear often in neighbouring regions (clusters of city-state cultures).
Historical repetition	A region has been observed to split into city-states only a few times (up to three) in its history.

Based on Hansen 2000b, pp. 16–17.

during the Early and Middle Bronze Age, a 'qualitative leap forward' during the Recent Bronze Age and 'new cultural developments' at the transition between the Recent and Final Bronze Age.[81]

In particular, as Peroni noted, by the Early Bronze Age an increase in agricultural practices is already present in central Italy, in parallel with more traditional primary production activities, such as stock-raising and hunting;[82] and all of these economic activities are fully integrated, along with metallurgy,

Table 7. The social evolution of central Italian communities from the Eneolithic (ca. 3000–2300 BC) to the Orientalizing Age (750/725–580 BC) according to the model of the Roman school of pre- and proto-history

	Eneolithic (3000–2300 BC)	Bronze Age			Early Iron Age (950/925–750/725 BC)	Orientalizing Age (750/725–580 BC)
		Early Bronze Age (2300–1700 BC)	Middle Bronze Age (1700–1325/1300 BC)	Recent–Final Bronze Age (1325/1300–950/925 BC)		
Strengthening of the agricultural economy	Intensification of agriculture & pastoralism; fishing & hunting	Intensification of agriculture & pastoralism; fishing & hunting	Further agricultural intensification & still dominant pastoralism	Integrated specialisation: intensive lowland agriculture & highland pastoralism	Intensification of cereal cultivation; introduction of olive & vine cultivation; herding rationalisation	Diffusion & intensification of olive & vine cultivation (poly-culture)
Technical progress	Animal-driven plough (middle Adriatic area); lithic technology innovation; copper technology introduction	Introduction of bronze technology	Innovations in bronze technology; increasing textile production	Increase, rationalization & standardisation of bronze production; introduction of glass production	Intensification of metal production (iron & precious metals); craft specialisation & diversification (ivory, glass, etc.); innovations (potter's wheel & updraft kilns)	Qualitative intensification of metal & pottery craft production; introduction of gold craft
Craft specialisation	Part-time household production	Metallurgy itinerant craft specialists	Metallurgy itinerant craft specialists	Community integration of metallurgy craft specialists	Full-time craft specialists; pottery craft production ateliers	Full-time craft specialists

Settlement stabilisation	Fluid trend towards settlement stabilisation	Settlement stabilisation & nucleation; selection of strategic positions	Increased settlement stabilisation & nucleation; selection of strategic positions; incipient hierarchy	Further settlement stabilisation & nucleation; selection of strategic positions; hierarchy	Proto-urban centres	‘Cities’
Social structure	Lineage groups; no stable rank	Lineage groups; stable rank (chief-warriors)	Lineage groups; stable rank; territorial communities	Family units; social stratification; *gentes- clientes* organisation (pre-urban level)	Family & larger units; social stratification; *gentes- clientes* organisation (proto-urban level)	Class division; *gentes- clientes* organisation (urban level)
Accumulation of wealth	Cattle herds	Beginning of hoards (standardised, integer axes)	Increase in hoards	Explosion of hoards (broken, varied objects; within settlements)	‘Princely’ burials	Public & sacred architecture
Exchange networks & markets	Mediterranean intercultural networks	Mediterranean intercultural networks	Central Italian metallurgical *koine* (axes)	Mediterranean metallurgical *koine*	Inter-regional, Tyrrhenian & Adriatic networks	Mediterranean Orientalizing *koine*

within the same community and in the same place.[83] Settlements of a permanent nature, in fact, also make their first appearance at this time, together with bronze hoards, which represent an enormous innovation in the form of wealth accumulation.[84]

In fact, as Peroni suggested, 'Unlike the possession of cattle, where the yield is direct and does not require investment in other economic activities, the possession of metal, in reserve or in circulation, serves to stimulate both the producing and exchange economy'.[85] Finally, the beginning of stable rank differentiation during the Middle Bronze Age (as opposed to the non-stable rank differentiation of the Eneolithic Age) is possibly suggested, according to Peroni, by a few exceptional male burials ('warriors'), which might be identified with the chiefs of each clan or lineage generation by generation.[86]

With the Middle Bronze Age there is an intensification of the process of settlement stabilisation and selection of strategic, defensive positions; this is accompanied by the first appearance in southern Etruria of 'secondary' centres (small hilltops or open sites), very near one another and evenly distributed around larger 'primary' centres in dominant strategic and visual positions ('polycentric communities').[87] In addition, as Peroni had already observed by the late 1960s and early 1970s, the Middle Bronze Age is the time when the first permanent settlements appear at a number of sites in central and southern Italy, such as Bologna, Rome, Bari and Taranto, which, since then, have been continuously settled.[88]

While olive stones found in a pot in the settlement of Vicarello, along the shores of Lake Bracciano, testify to the first appearance in central Italy of this type of cultivation,[89] archaeo-botanical and archaeo-zoological data seem to indicate that, during the Middle Bronze Age, subsistence is based on an integration of less intensive agriculture (with a higher percentage of legumes than cereals) and seasonal transhumant pastoralism (with a higher incidence of the latter). However, the increasing number of cow remains found in settlements and the higher percentage of cereals in pollen diagrams during the Bronze Age seem to indicate a trend towards more intensive agriculture and more stable stock-raising.[90]

With the Recent Bronze Age, Peroni detects a 'qualitative leap forward', which is related mainly to metal production.[91] At this time it is possible to observe rationalisation, specialisation and a general improvement in metal production, with 'an increase in the size of the markets and an intensification of commercial exchanges of an exclusive metallurgical nature'.[92] In fact, during the Recent Bronze Age, exactly the same types of objects (swords, knives, daggers, *fibulae* or brooches, pins, etc.) can be found from northern continental Europe to the western Mediterranean regions to Aegean shores.[93]

Peroni calls this phenomenon the 'metallurgical *koine*' (metallurgical common style) and links it to the rising of the Mycenaean Empire and Aegean markets, which could 'absorb more raw material and would therefore have stimulated mining in the Carpathians and in the eastern Alps; this in turn would have increased the output of finished products on the spot and, indirectly, have led to their wider commercial diffusion'.[94] The passage from the Recent to the Final Bronze Age saw further 'new cultural developments', whose full development, by the end of the Early Iron Age and the beginning of the Orientalizing Age, would lead central Italian communities to full urbanisation.

Notwithstanding the decline of the Recent Bronze Age Mediterranean metallurgical *koine*, metal demand was still growing and Final Bronze Age production seems to return to 'local' and 'regional' specialisations, with a greater integration of craft specialists within stable communities.[95] Metal hoards, which now include work tools, sometimes found within settlements, are more numerous and richer than in the previous phases, possibly indicating, together with the appearance of a few exceptional burials and 'princely mansions', the emergence of social stratification.[96]

In addition, during the Final Bronze Age there is an acceleration and intensification of settlement stabilisation and selection, with a preference for locations on hilltops and small plateaux.[97] At the same time an integrated and complementary economic specialisation between agricultural activities, practiced in the central Italian lowlands, and seasonal pastoralism, restricted mainly to the Apennine highlands, which would continue into historical times, are fully realised.[98]

Finally, during the Early Iron Age, all the trends identified in the preceding paragraphs consolidate and increase dramatically to reach full development in the Orientalizing and Archaic Ages within a new urban context. As will be shown in 'The Nature of Settlement Development in Latium Vetus' in Section 2.1 and 'Settlement Centralisation' in Section 7.2, between the end of the Final Bronze Age and the beginning of the Early Iron Age, communities move into large nucleated and centralised settlements located on big plateaux near the sea or rivers of regional importance, with easy access to good agricultural land and control over large territories. In addition, during the Early Iron Age, cereal cultivation increases and poly-culture (olive and vine) intensifies.

Metal production is improved with the introduction of iron, firstly for luxury items and subsequently for working tools. Pottery technology is enhanced by the introduction of the potter's wheel and high-temperature and updraft kilns, and new specialised crafts for the creation of prestige products (ivory, glass, gold granulation, etc.) are developed, partially under the influence of external stimuli (Greek and Phoenician influences).[99] Finally, the contrast, already detected in previous phases, between 'warrior' and 'rich female' burials and ordinary depositions increases as time goes by, and status is increasingly and more closely connected with wealth accumulation and conspicuous consumption in lavish funerary rituals.[100]

The Socio-Ecological Model of Urbanisation Developed by John Bintliff

While the model of social evolution elaborated by the school of pre- and proto-history provides a convincing descriptive and interpretative framework for the evolution of Middle Tyrrhenian Italy communities from Bronze Age dispersed villages (or even earlier mobile agricultural and pastoral communities) to the cities of the Orientalizing/Archaic Ages, the theory of social fission versus corporate communities, which John Bintliff joined with catchment and territory models in a new socio-ecological model, seems to provide a possible explanation of the same phenomenon.

By combining traditional German landscape ideas[101] with territorial behaviour theories[102] and socio-demographic approaches,[103] Bintliff offers a convincing and stimulating justification of the evolutionary dynamics of settlement systems (formative villages, territory tessellation, nucleation, centralisation, politicisation) occurring in Greece from the Dark Age to the Early Classical Period, which led to the formation and realization of the city-state model in that region.[104] As foreseen by Bintliff[105] and demonstrated in this work, the model can also be fruitfully applied to middle Tyrrhenian Italy, thus 'confirming the original nature of the city-state model as a cross-culturally-repeated phenomenon in itself'.[106]

In the chapters that follow the model will be tested on newly published and unpublished data from Latium vetus and will provide a possible explanation not only of how, but more importantly why, by the Late Bronze Age or beginning of the Early Iron Age previously dispersed villages were abandoned in favour of large nucleated and centralised proto-urban centres, which later became cities in the Archaic Age (cf. analyses in 'Site Distribution and Hierarchical Levels: Territorial Sample' in Section 5.4, 'Site Distribution and Hierarchical Levels: Regional Sample' in Section 6.4, and the discussion in Section 7.3).

The Contribution of German Landscape Ideas and Territorial Behaviour Approaches to the Socio-Ecological Model of Urbanisation

Bintliff's theory adopts the concept of the Greek city-state as a village-state (*Dorfstaat*), originally elaborated in a pioneering study by the historical geographer Ernst Kirsten[107] and confirmed and substantiated by the quantitative study on the size of the territory and population of the *Normalpolis* (the typical city or the city model) by Eberhard Ruschenbusch.[108] Bintliff has merged these with traditional approaches to the study of human territoriality, such as catchment analysis, and with demographic theories on the optimal size of a social group based on face-to-face relationships, independently developed by the anthropologists Anthony Forge and Robin Dunbar,[109] in order to provide a satisfactory explanation of the origin and formation of the city-state in Greece.[110]

Using evidence from different times and geographical contexts, Bintliff demonstrated in various contributions that constant and recurring 'quanta' can be observed in the territorial sizes of settlements in mixed dry-farming societies: catchment radius quanta are scaled in size from 5–6 km to 3–4, to 2–3 and finally to 1–2 km according to a regular and progressive tessellation and fragmentation of the territorial catchment areas. In particular a territory with a 5- to 6-km radius corresponds to the maximal and optimal resource zone, predicted by traditional catchment analysis for the subsistence of pre-industrial farming societies.[111]

Territories with a radius of 3–4 or 2–3 km would derive from the fission of this ideal and original maximal catchment area of 5- to 6-km radius or 1 hour's walking time. However, this reduction of the original catchment area would not imply any stress on the community involved (even in the case of more intensive agricultural practices). Therefore, according to Bintliff, these quanta tend to be associated with a reasonably stable settlement system. By contrast, a territory radius of 1–2 km indicates an extreme territorial tessellation and diminution of resources, which 'might be symptomatic of societies under resources and/or overpopulation stress'.[112]

The Contribution of Face-to-Face Social Organisation Theories to the Socio-Ecological Model of Urbanisation

As previously stated, the demographic theories incorporated into Bintliff's model are derived from studies by Anthony Forge and Robin Dunbar. According to Forge's ethnographic study, villages tend to stabilise at an average size of 150 people in order to maintain a face-to-face form of social interaction. If this threshold is surpassed, the village is likely to divide or to undergo an internal horizontal sub-division into distinct social groups, thus maintaining small-scale community relationships, up to 300–400 individuals.[113]

Dunbar also calculates the threshold limit of a face-to-face society at about 150 individuals, but he suggests another possible outcome for an oversized community: the creation of 'vertical roles' and 'social stratification', so that within the dominant class, a face-to-face social interaction is still possible.[114] The problem of small communities based on face-to-face social relationships is that exogamy has to be practiced to ensure community survival in the long term.[115]

To emphasise this point Bintliff appeals to Martin Wobst's study, which fixes the minimum community size for the practice of endogamy at around 400–500 individuals.[116] Here Bintliff correctly uses the example of medieval Italian *campanilismo* to describe the inter-community tensions which can result even in physical aggression between neighbouring communities as they compete to keep marriages (and consequently land and economic resources, in the form of a dowry) within the villages.[117] As anticipated earlier, Dunbar's theory offers a socio-political solution to this problem: the expansion of the settlement combined with the foundation of a 'corporate community' based on incipient vertical stratification. In this way, the small group of 'better men' maintains face-to-face interactions within the enlarged village, holds the community more firmly together and 'begins to take on *mini-state* attributes of communal organisation'.[118]

The Socio-Ecological Model Applied to Urbanisation in Greece during the First Millennium BC

The model of social evolution just described was applied to Greece by Bintliff in order to describe and explain the formation of the city-state model in that region. According to Bintliff, Dark Age settlements were small villages, few in number and widely spaced. The fission process maintained the village population within the threshold limit of 150–200 individuals and led to a territorial tessellation reduced by the early historic era (Late Archaic Age to Early Classical Period) to a mature and stable pattern of villages with territories of about 2.5-km radius.

By the end of the Dark Age and during the Archaic Age, a very large number of the smaller villages grew and surpassed the limit of 500 citizens; once this number is exceeded, endogamous practices are possible but a corporate organisation is required to maintain a face-to-face relationship among peers of the elite group.[119] At this point, Bintliff notes, it is also possible that these stable, strong and self-contained communities claimed 'statehood or at least a high level of political autonomy from their neighbours (*protopoleis*)'.[120]

According to Bintliff, it is likely that in this scenario some of these aspirant city-states lost their autonomy and became dependent on the most powerful village-states in each district, which incorporated them into their territories, thus producing an average territorial radius for the dominant city of about 5–6 km (double the size of the 2- to 3-km radius typical of a mature and stable territorial system). Bintliff noticed that this territory size corresponds to the maximum catchment area for regular intense farming of a single centre, probably implying that this enabled the leading settlement to somehow control the farmland of its satellites for full efficiency.[121]

1.3. CONCLUSIONS: TOWARDS A RECONCILIATION

While more nuanced positions can be identified, it is possible to simplify the ongoing debate on the origin of the city in middle Tyrrhenian Italy during the first millennium BC by narrowing it down to two opposing traditions of study: exogenous and endogenous. The exogenous tradition stresses the impact of Greek and Near Eastern civilizations on the trend towards urbanisation in local Italian communities (diffusionism) and therefore underestimates or even denies indices of social and economic complexity of proto-historic Italian communities (primitivism). By contrast, the endogenous tradition emphasises local trajectories toward higher social and economic complexity, which can be identified in the archaeological evidence since the end of the Bronze Age, if not earlier (Section 1.1).

The present work will contribute to this debate by focusing on settlement patterns in Rome and the surrounding region from the Middle Bronze Age to the Archaic Age. The location of sites will be analysed in relation to environmental variables and against a number of locational models; then the results of these analyses, integrated with studies based on different types of evidence (funerary evidence, craft and production, vegetation, etc.), will be interpreted in the light of a multi-dimensional and multi-theoretical framework, which aims to circumvent the dichotomy between evolutionary and anti-evolutionary models (Section 1.2).

Traditional evolutionary models, based on the sequence band, tribe, chiefdom, state, have been criticised by proponents of more recent holistic and multi-trajectory theories, such as heterarchy, agency and tinkering theories, corporate versus network mode theories and chaos theories. These theories claim there are individual and relative circumstances (both environmental and historical) which make each evolutionary change a unique historical event. However, it cannot be denied that people from different cultures and times do react to these unique circumstances with similar attitudes, within a relatively limited range of variability. Thus, even allowing for chaos theories, any given dynamic system with a series of variables and causal events will exhibit a few cyclic but defined behaviours (the so-called attractors), which provide the system with a certain degree of regularity and predictability.[122]

Therefore, this work suggests going beyond this debate by adopting a multi-theoretical framework and a multi-dimensional approach, as already successfully applied by Gideon Shelach in his work on social complexity in northeast China from the fourth to the first millennium BC. The multi-theoretical framework proposed by Shelach suggests the integration of apparently opposite and polarised theoretical approaches (such as processual methodology and post-processual insights, or evolutionary, anti-evolutionary and heterarchical trends, or external influences and indigenous processes) in a dialectic synthesis, which will provide a richer picture of the intrinsically complex and varied nature of the human experience itself.[123]

In this way, Shelach's multi-dimensional approach allows for local variability or even contradictory changes to coexist in different dimensions of social evolution.[124] The different socio-political dimensions (e.g., economic structure, technological innovation, inter-regional interaction, ideology or symbolic expression), which progress independently and not always at a uniform pace, will eventually converge in certain localities or junctions, where interdependency and feedback mechanisms might be detected. Generally these localities or junctions, where more socio-political dimensions converge, mark a specific social change ('conjunction' of socio-political dimensions), which leads to a different socio-political type (or 'socio-political network').[125]

The adoption of a multi-dimensional approach with a multi-theoretical framework also allows the inclusion of the model of social evolution elaborated by the pre- and proto-history Roman school specifically for Bronze Age and Early Iron Age Italic communities. This model is important not only because it is based on knowledge of the material evidence of the region, but also because it adopts a long-term perspective, which in my opinion is essential for correctly understanding urbanisation processes of the eighth and seventh centuries BC.[126]

Finally, while evolutionary and multi-trajectory models provide, from different perspectives, a very convincing description of how a sparse village system evolved into a nucleated and centralised settlement organisation (central places destined to become cities), the socio-ecological model of urban evolution developed by John Bintliff for the evolution of Greek cities during the first millennium BC will provide a convincing explanation of why this happened in middle Tyrrhenian Italy too, with similar modalities and timing.

TWO

THE LATIN LANDSCAPE, DATA AND METHODOLOGY

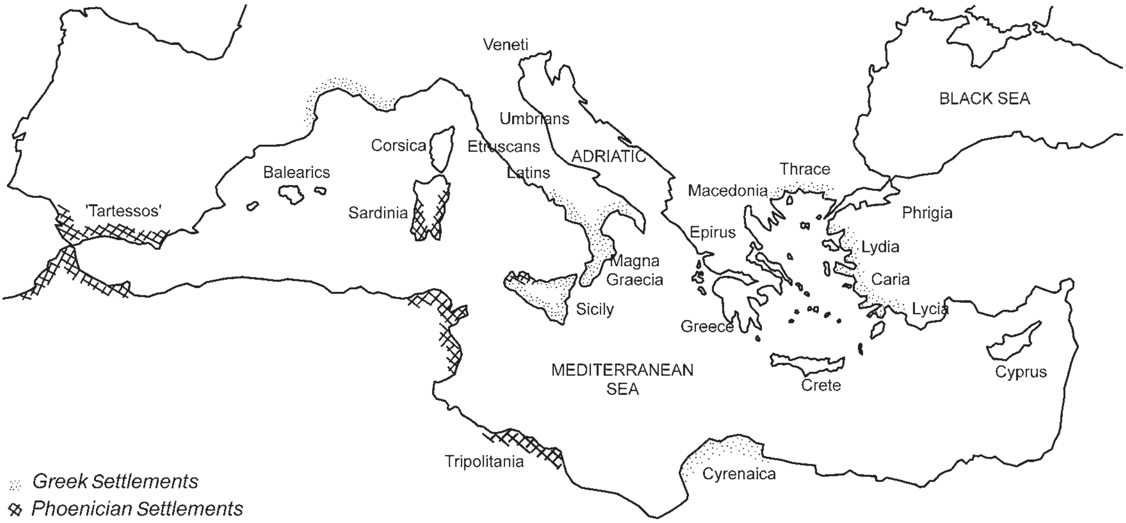
2.1. THE LATIN LANDSCAPE

Geography and Morphology

Italy has a central location in the Mediterranean basin (Fig. 3); it is midway between the eastern and western Mediterranean, and not surprisingly the fertile coastal soils of southern Italy were attractive to Greek colonists in search of fortune in the 'barbarian' west. To the north, Italy is bordered by the Alps, but there are several passes which opened the way to migration and invasions from central Europe. From north to south, the peninsula is divided by the Apennine Mountains. The Apennines are situated closer to the coast and are much steeper on the east, while their slope is gentler in the west.[1]

Along the west coast of the peninsula, a series of volcanoes produced a covering of lava and volcanic ash that weathered into fertile soil. Apart from the Po valley in the north and the Apulia plateaux in the south, the most fertile areas of Italy are located on the west side: Etruria, Latium and Campania.[2] It is probably not coincidental that these three areas were the geographical basins for the first urbanisation in Italy, during the first millennium BC.

Middle Tyrrhenian Italy and the Tiber valley have two main geological and morphological features: the Sabatini Hills to the north and the Alban Hills to the south (Middle Pleistocene). The eruptions of these now coalescent volcanoes produced the tuff systems that descend toward the Tiber from the north-west and south-east. These tuff systems, eroded by rivers and winds, formed the


Veneti
BLACK SEA
Umbrians
Corsica
Etruscans
ADRIATIC
Balearics
Latins
Thrace
Macedonia
'Tartessos'
Sardinia
Phrigia
Epirus
Lydia
Magna Graecia
Caria
Sicily
Lycia
Greece
MEDITERRANEAN SEA
Crete
Cyprus
Tripolitania
Cyrenaica
Greek Settlements
Phoenician Settlements

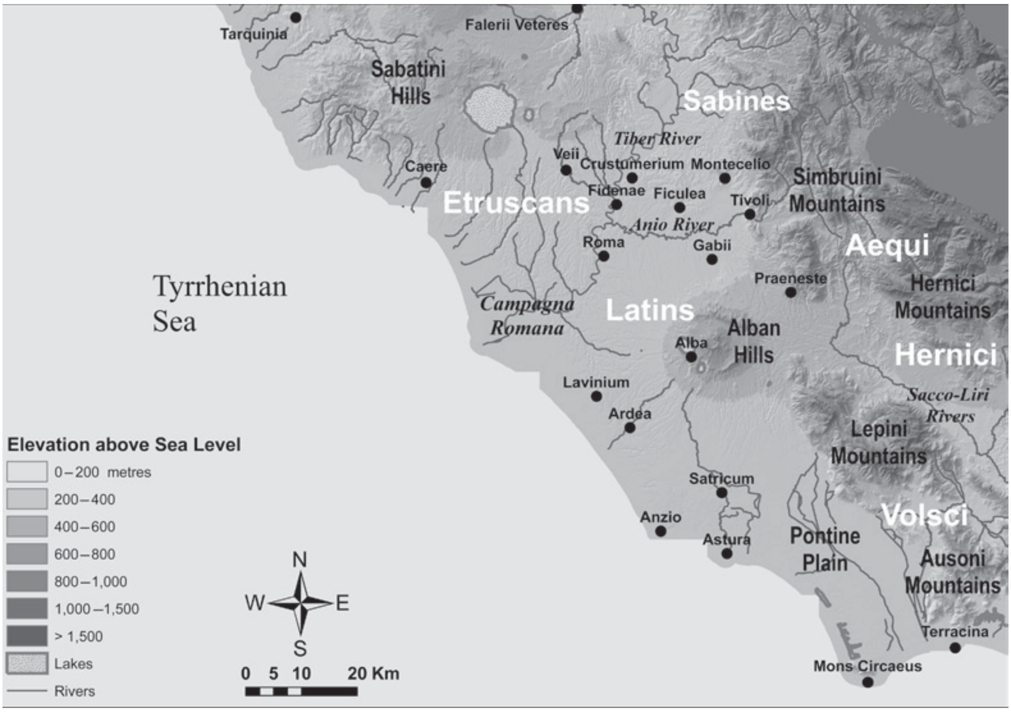
3. Italy with Latium and Etruria in the Mediterranean basin.

tuff plateaux which constituted the most favourable (and favourite) locations for habitation during the Bronze and Early Iron Ages (the so-called Campagna Romana is discussed later).

It is commonly agreed that the plain of Latium, which lies midway along the western Italian coast, had an important geographical advantage. It was at the junction of several significant natural routes to the surrounding regions, such as those running to Etruria in the north and to Magna Grecia (Great Greece) in the south.[3] Although there were few natural bays or harbours, the Tiber River, which formed the frontier between northern Latium and southern Etruria, gave swift access to the coast and to the centre of the peninsula.

The region surrounding Rome, Latium vetus (Fig. 4), whose boundaries will be discussed later, is bordered on the west by the Tyrrhenian Sea and on the north-east by the Apennine Mountains (Hernici and Simbruini Mountains) and their limestone peaks. Among the Sub-Apennines, in particular, the Tiburtini and Praenestini Mountains (behind the centres of Tivoli and Praenestae, toward the north-east), are lower (highest peaks about 1,200 m) and more favourable to human settlement, while the Lepini, Ausoni and Aurunci Mountains, toward the south-east, are slightly higher (highest peaks about 1,500 m), harsher and more impervious to human habitation.[4] To the north the Tiber divides Etruria from Latium, but this permeable frontier was never a significant obstacle to cultural and other exchanges.[5]

The valleys of Latium (all areas less than 300 m above sea level) are vast and fertile. The so-called Campagna Romana extends from the foot of the Tiburtini Mountains and the Alban Hills to the north-east and east, and down to the sea, to the west; to the north it crosses the Tiber up to the Maremma Laziale (the southern part of the Maremma Toscana, including Tarquinia, down to Caere and Civitavecchia); and to the south it reaches the Pontine Plain,

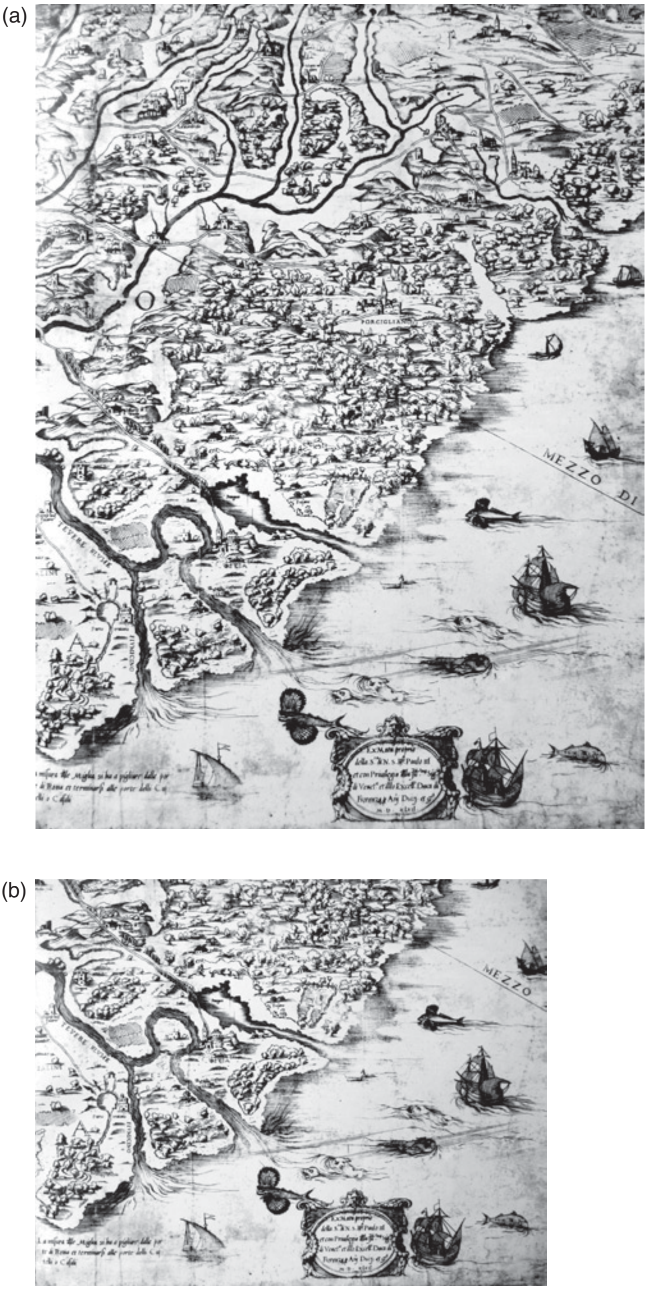

Tarquinia
Falerii Veteres
Sabatini Hills
Sabines
Tiber River
Veii
Crustumerium
Montecelio
Caere
Simbruini Mountains
Etruscans
Fidenae
Ficulea
Tivoli
Anio River
Roma
Gabii
Aequi
Tyrrhenian Sea
Praeneste
Hernici Mountains
Campagna Romana
Latins
Alba
Alban Hills
Hernici
Lavinium
Sacco-Liri Rivers
Ardea
Lepini Mountains
Elevation above Sea Level
0–200 metres
200–400
400–600
600–800
800–1,000
1,000–1,500
> 1,500
Lakes
Rivers
Satricum
Anzio
Astura
Pontine Plain
Volsci
Ausoni Mountains
N
W
E
S
0 5 10 20 Km
Terracina
Mons Circaeus

4. The area surrounding Rome: Latium vetus.

located between the sea and the Lepini and Ausoni Mountains, an area that is only partially included in the present study (Satricum, Astura and Cisterna di Latina are at the border between the Latin and Pontine Plains).

As already mentioned, the Campagna Romana is constituted by a tuff plateau, deposited during the Middle Pleistocene by eruptions of the Alban and Sabatini Hills. It is intersected by numerous small rivers and interrupted by a number of modest relieves, whose elevation never surpasses 200 m; among these are the hills of Rome. On the coast, at the mouth of the Tiber near Ostia, and from Fosso di Pratica to Torre S. Anastasio, there were wide lagoons, which are visible in an ancient map by Eufrosino della Volpaia, 1547 (Fig. 5) and in other maps published by Frutaz in the 1970s[6] and re-examined recently by Luca Alessandri.[7] The Tiber valley, formed by fluvial deposits, is relatively wide immediately to the north of Rome and constitutes a sort of continuation of the Campagna Romana inland, towards the mountains.

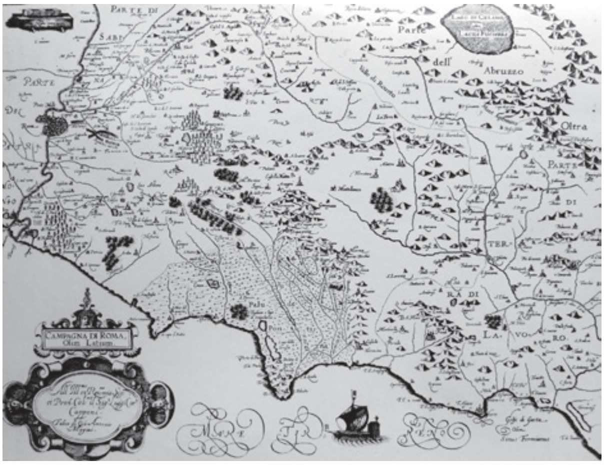
The Pontine Plain, to the south, is constituted by a series of costal dunes made of submarine sands and gravels deposits, which emerged during the Quaternary Era (Duna Recente), interspersed by a series of oblong lakes, projected towards the interior, and residues of older lagoons; then by an intermediate strip of red sand deposits, now fused but once residues of older dunes dating back 600,000 years ago (Duna Rossa Antica); and finally a vast marshy area of alluvial origin, extending along the foot of the Lepini and Ausoni Mountains, and only recently completely drained (Fig. 6).[8]


(a)
PORCIGLIA
MEZZO DI
TEVERE FIUME
(b)
MEZZO

5. Map of Rome and Latium by Eufrosino della Volpaia, 1547. (a) General view; (b) detail of the mouth of the Tiber near Ostia; (c) detail of the area of Pratica di Mare. (From Frutaz 1972, vol. 2, table 30.)

(c)
PORCIGLIANO

5 (*continued*)


PARTE DI
SABI
PARTE
DEL
Parte
dell'
Abruzzo
Oltra
PARTE
DI
TER
RA DI
LA
VO
RO
CAMPAGNA DI ROMA Olim Latium

6. Map of Rome and Latium by Gio Antonio Magini, 1620. (From Frutaz 1972, vol. 2, table 54.)

The fertile valleys of Latium could support a dense population and later, when marshy areas were drained, provided an even more extended area for settlement. The people from the neighbouring uplands, envious of Latium's fertility, repeatedly raided the area until the fourth century BC. For instance, migrations from the Sabine region (modern Rieti) known as the Ver Sacrum (Sacred Spring) periodically occurred during early historical and, according to some scholars, even pre-historic times.[9]

In conclusion, Rome developed on a site on a river where volcanic outflows had produced a group of hills in close proximity. These hills were easily defended and allowed access to the Tiber, where an island in the river – the only one in the vicinity – could easily serve as a bridge. As recognised by many authors, the city of Rome had geographical assets from the start, which played a significant part in its development: fertile farming land, easily defended hills, access to the sea, a position where the river could be bridged and a central position for fluvial and terrestrial communications.[10]

Geology

The most ancient geological layers of the Latin region are sands and limestone clays deposited in a shallow sea during the Pliocene Era, up to 300 million years ago. They covered the lower Mesozoic substrate and formed a new platform, which constituted the foundation of subsequent deposits.[11] Between 20 and 2 million years ago, complex collisions and extensions between the African and Eurasian continental plates, running along the Italian peninsula, forced the limestone deposits up and formed the Apennine Mountains. At the same time, the Italian peninsula began to rotate counter-clockwise, opening a basin which went on to form what is now the Tyrrhenian Sea.[12]

Volcanic activity also occurred under the sea, and the coastal plain is a product of the upward thrust of the Apennine chain and the subsiding of the Tyrrhenian basin, which has been occurring slowly over the past 20 million years. Compression and extension continued to produce movements along these faults, which created the water network and the valleys inhabited from pre-historic times till today. The region on the south-east side of the Tiber rose, and this land elevation redirected the flow of the river towards the sea on a course similar to what exists today.[13]

On both sides of the Lepini Mountains, faults subsided and the ground level was diminished. On the inland side, the Sacco-Liri valley was created, which became an important route towards Campania in both historic and prehistoric times. On the coastal side the geological fault resulted in a depression, which would be later occupied by the Pontine region.[14] About 600,000 years ago, the volcanic activity of the Alban Hills began, and the volcanic material together with sediments transported by rivers began to fill up the depression (Duna Rossa Antica).[15]

Volcanic deposits also had a negative impact, however; they disrupted the natural drainage system in the coastal plain south of Rome, producing many lagoons and marshes, until recently very familiar in the landscape immediately south of Rome. The last residues of these marshes in the Pontine Plain were not drained until the 1930s. Between this marsh area and the sea, submarine sands and gravel deposits emerged during the Quaternary Era (or Neozoic Era, including the Holocene and Pleistocene and lasting from 1.8 million years ago to the present), which would became the costal ridges of the Pontine Plain (Duna Recente).[16]

The Alban Hills were part of a line of volcanic activity running from the Volsinii and Cimini Hills in the north to the Campi Flegrei and Vesuvius to the

7. Ardea acropolis, south-west side. (BSR Archive, Thomas Ashby photographic collection, ta-0258.)

south. The Alban and Sabatini Hills, respectively located north-west and south-east of Rome, are the two most important volcanic features in the region under study. Their eruptions created two tuff systems that descend towards the Tiber. Volcanic ash projected at very large distances produced *pozzolane* and tuff soils, which, when eroded by rivers, resulted in the typical plateaux occupied by pre- and proto-historic settlements, such as Ardea (Fig. 7) and the seven hills of Rome. These are young volcanic systems, their most recent eruption having occurred about 3,500 years ago.[17]

The Limits of Latium Vetus

As already mentioned the region immediately surrounding Rome is generally identified as Latium vetus. It is generally thought that ancient Latium consists of the region roughly corresponding to modern southern Lazio, which is conventionally bounded by the Tiber River to the north, the Sacco-Liri Rivers to the east and the Garigliano River to the south. However, the exact definition of its boundaries remains controversial. Giovanni Colonna has noted the difficulty of defining the region geographically because of the lack of distinct geographical boundaries: to the north, along the Tiber, Latium intrudes between the Etruscan and Sabine regions; to the south, in the Pontine Plain, and to the south-east, in the Sacco-Liri valley, it passes almost imperceptibly through the lands of Herinci, Volsci and Aurunci.[18]

The ambiguity of the northern boundary in antiquity is confirmed by the uncertainty with which ancient authors define the ethnicity of centres located in the area, such as Crustumerium, which is alternatively attributed to the Latin or Sabine ethnos.[19] Therefore, some scholars prefer to define this area, including such centres as Crustumerium, Fidenae, Tibur and Nomentum, as a 'boundary zone', although the material culture of these centres clearly has a Latin background.[20]

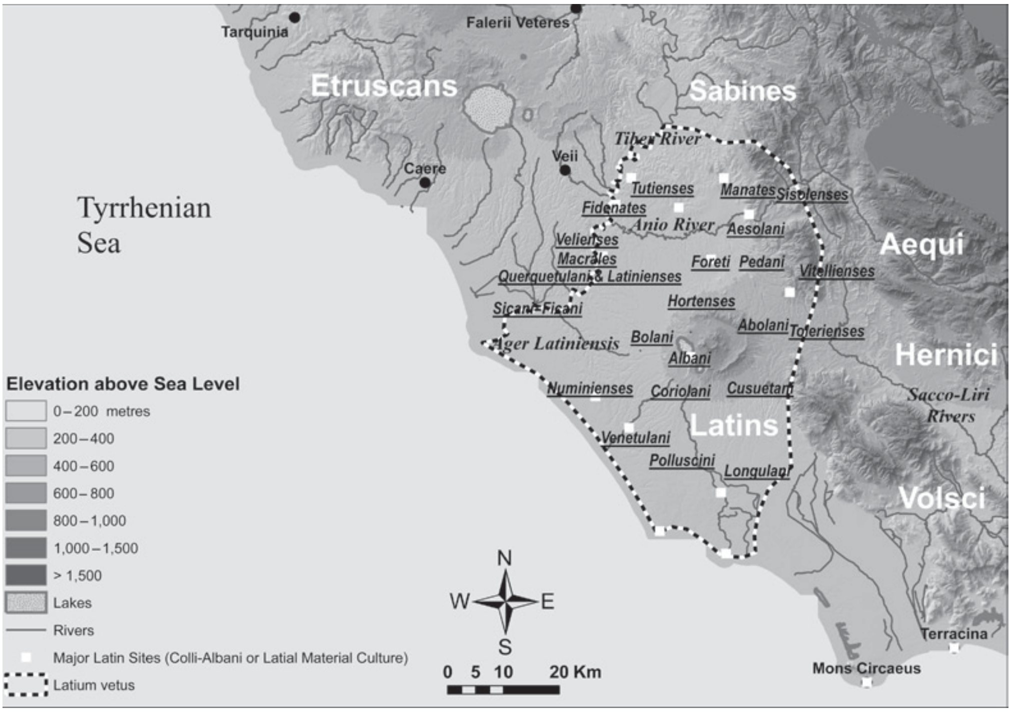
Similarly, to the south, Latium vetus should be distinguished from Latium adiectum, but more on historical grounds than anything else. According to Ennius (239–169 BC), in fact, Latium vetus or antiquus (Old or Antique Latium) was the original area inhabited by the earliest people of the Latin ethnos (Nomen Latinum), so-called *prisci* or *casci Latini* (first or oldest Latin people), to be distinguished from so-called Latium adiectum (Added Latium), which was not conquered or colonised until the Regal Period onwards.[21]

Therefore, as suggested by Lorenzo Quilici[22] and Giovanni Colonna[23] and later noted by Alexandre Grandazzi: 'If there is any unity, it lies in what makes Latium, before anything else, a borderland, a sphere of contacts (albeit violent), a space for encounters. That is why there is no strictly geographical definition that is adequate in itself, and the old question of Latium's boundaries, the torment of so many specialists of ancient topography, calls for a response that is in the first place *historical*'.[24]

A number of ancient authors, including Pliny the Elder (23–79 AD),[25] Strabo (63 or 64 BC–24 AD),[26] Servius (fourth century AD)[27] and Vergil (70 BC–19 AD),[28] seem to agree that the boundary between Latium vetus and Latium adiectum is located at the Mons Circeus, which would include within Latium vetus the whole Pontine Plain, extending to the west of the Lepini Mountains, down to Terracina.[29] This boundary, marked also by the natural barrier of the Ausoni Mountains, which meet the sea at Terracina and divide the Pontine Plain from the Fondi Plain, seems to have a cultural significance. In fact, it seems to indicate the boundary (although permeable) between the Latin material culture to the north and the material culture characteristic of the Campania region to the south.[30] However, to the south of Satricum, Anzio and Astura, down to the boundary of Mons Circeus and Terracina, the archaeological evidence of Latin culture becomes scarcer and less evident.[31]

Several modern scholars, such as Heikki Solin[32] and Paolo Carafa,[33] have attempted to identify the boundaries of Latium vetus and Latium adiectum from an historical perspective. After examining the literary accounts and epigraphic evidence in detail, Solin considers Latin centres to be those that are not mentioned among the Latin colonies. This assumption is based on the belief that early Latin colonies, founded by Rome during the Regal and Early Republican Periods, would not have been established in the 'ancient Latin territory', but simply in areas of 'Latin interest'.[34]

Solin's interpretation of Latium vetus is very strict and excludes centres such as Ardea, Anzio and Satricum, which are clearly connected to the Latin culture by abundant archaeological evidence.[35] According to Solin, Latium vetus would be limited to the plains along the Tiber between the Anio River and


Tarquinia
Falerii Veteres
Etruscans
Sabines
Tiber River
Veii
Caere
Tyrrhenian Sea
Tutienses
Manates
Sisolenses
Fidenates
Anio River
Aesolani
Velienses
Macrales
Foreti
Pedani
Vitellienses
Aequi
Querquetulani & Latinienses
Hortenses
Sicani=Ficani
Abolani
Toferienses
Ager Latiniensis
Bolani
Albani
Hernici
Elevation above Sea Level
0–200 metres
200–400
400–600
600–800
800–1,000
1,000–1,500
> 1,500
Lakes
Rivers
Major Latin Sites (Colli-Albani or Latial Material Culture)
Latium vetus
Numinienses
Coriolani
Cusuetani
Sacco-Liri Rivers
Latins
Venetulani
Polluscini
Longulani
Volsci
N
W
E
S
0 5 10 20 Km
Terracina
Mons Circaeus

8. Latium vetus: region of the Populi Albenses, or Alban People (after Carafa 1997a), compared with the core diffusion area of the Latin material culture, so-called Colli-Albani or Latial Periods I–IV (after Ampolo et al. 1980, with map, pp. 12–13).

the sea, which at the time of Cicero (106–43 BC) was still called *ager Latinus* or Latiniensis[36] (cf. Fig. 8). A number of scholars, in apparent support of Solin's interpretation, identify this zone with the original area inhabited by the *prisci Latini*, or 'first Latins', mentioned in literary accounts.[37]

However, as Andrea Carandini emphasised, this interpretation is based on the identification of the *prisci Latini* with the Aborigenes (Autochthonous People), mentioned in the literary accounts as one of the oldest population of Latium.[38] According to the tradition, the Aborigenes were people of uncertain origin (Italic or Greek), who came to Latium from the Sabine area around Rieti and forced out the indigenous inhabitants (Siculi), who moved to Sicily. Therefore, according to Carandini, while these people can be considered 'Latinised' (*casci Latini*, where *casci* means 'old' in the Sabine language), they are not yet Latins.[39]

The Latin people or ethnos would have derived from the fusion of the Aborigenes (*casci Latini*, according to Carandini) and the people of the Alban Hills (*prisci Latini*, according to Carandini), which can be dated to around the first phase of the Final Bronze Age, in the twelfth and eleventh centuries BC. However, an actual Latin identity could be determined only by the Final Bronze Age 3 and the beginning of the Early Iron Age, at the end of the eleventh and the tenth century BC, when the first homogeneous material culture appears in the region (Latial Periods I and IIA).[40] Thus the oldest Latin people would probably be more correctly identified as the Populi Albenses (Alban People), who according to tradition participated every year in the Feriae Latinae (Latin Festival), an annual celebration held in honour of Jupiter Latiaris on the Monte Cavo, in the area of the Alban Hills.[41]

According to one interpretation, the Populi Albenses should be considered only a religious league;[42] according to another, however, they formed a political and territorial federation, which attests to the existence of the first Latin people (Nomen Latinum).[43] If this second interpretation is accepted, the identification and localization of the Alban People (Populi Albenses) would indicate the geographical boundaries of the most ancient Latin territory (Latium vetus).

Following this hypothesis, Paolo Carafa has attempted to localise the Populi Albenses on a map and to define the limits of the region of the Alban People, and therefore of Latium vetus. According to Carafa's reconstruction,[44] this region would have included the high Anio (*fiume Aniene*) valley to the west of the Simbruini Hills, the area of the Alban Hills and the coastal area of Latium, south of the Tiber (*fiume Tevere*) and right to the Anio River, down to the Astura River towards the south.

While the debate is ongoing, it cannot be denied that this region corresponds closely to the core area of the geographical distribution of the Latin material culture (so-called Colli-Albani or Latial Periods I–IV) which developed during the Early Iron Age and Orientalizing Age (Fig. 8).[45]

The Nature of Settlement Development in Latium Vetus

Knowledge of pre- and proto-historic sites in the region south of the Tiber grew exponentially during the last thirty years of the twentieth century and the beginning of the twenty-first century, thanks to a number of systematic survey projects (e.g., the Forma Italiae and Latium vetus series, and research by the Archaeological Superintendence of Rome, by various scholars from the University of Rome 'La Sapienza', by Dutch scholars, by scholars of the British School of Rome and by various volunteer groups). While no systematic study has been published in recent years,[46] a great number of articles focused on specific areas or phases have appeared in journals, as well as in conference proceedings or monograph series.

Many of these studies were conducted by pupils of Renato Peroni, members of the so-called Roman school of pre- and proto-history. Among these, the study by Marco Pacciarelli, which proposes a diachronic interpretation of settlement development in Latium vetus, is particularly useful for its clarity and comprehensiveness.[47] Referring mainly to this study, this section will offer an introduction to the nature and development of settlement in Latium vetus, which will provide background knowledge for the analyses and discussions presented in Chapters 3, 4, 5 and 6 and the interpretations suggested in Chapter 7 and the concluding chapter.

Both older and more recent studies have observed that by the Ancient Bronze Age (twenty-third to eighteenth century BC) and the Middle Bronze Age (seventeenth to fourteenth century BC) a sparse and scattered distribution of small settlements can be found generally extending about 1 ha and rarely exceeding a few hectares.[48] In areas intensively surveyed, it has also been observed that these sites are normally not too distant from one another; for example, in the area of Guidonia, they are less than 2 km apart.[49] During these phases, settlements are still very unstable, as indicated by the survival of very few sites from the Middle Bronze Age 1–2 (seventeenth to fourteenth century BC) to the Middle Bronze Age 3 (fourteenth century BC).

Although it is very difficult to reconstruct the original morphology of the area, which has been profoundly modified over centuries of human activity, it seems clear that during the Middle Bronze Age 1–2 most settlements are located on middle-range slopes (*pendio*), and hilltop locations are very rare. Subsequently, during the Middle Bronze Age 3, valley and middle-range slope locations are still predominant, but the proportion of sites on hilltops grows, especially in the area around Rome. In this phase (Middle Bronze Age 3) one can observe the occupation of a number of key strategic sites (e.g., the acropolis of Lavinium), which endured throughout the Bronze Age and eventually developed in proto-urban centres during the Early Iron Age.

The preference for a high location on plateaux or hilltops is even more evident with the foundation of new settlements during the Recent Bronze Age (ca. thirteenth century BC), when most Middle Bronze Age 3 settlements are abandoned, especially in lowland or open positions.[50] Another favourite location, during the Recent Bronze Age, seems to be at the edge of water resources such as lagoons or lakes. In summary, the passage from the Middle Bronze Age to the Recent Bronze Age seems to mark a shift from a sparse and capillary settlement distribution to more organised territorial systems centred on a dominant plateau or a hilltop, with key strategic control of resources or communication nodes.

This model also applies to the Final Bronze Age (twelfth to the eleventh century and beginning of the tenth century BC), when the number of defensive sites continues to grow steadily and the number of sites along lagoons or lakes diminishes drastically. Distance between settlements within the same territorial system is still in the range of 2–3 km, probably indicating a limited sphere of influence of each site and a simple socio-political organisation. According to some scholars, this recalls the tradition of the league of the thirty Populi Albenses, with their hegemonic centre in Alba and their federal sanctuary at Monte Cavo, a site occupied since the Final Bronze Age.[51]

With the beginning of the Early Iron Age (middle to the end of the tenth century BC), and especially with Latial Sub-Phase IIA2 (end of the tenth or beginning of the ninth century BC), a number of small settlements disappear, especially in the area around Rome, while a number of large nucleated centres are formed on the plateaux that are later occupied by Archaic cities. This indicates that proto-urban processes have begun in this area, too, although they are slightly delayed in comparison with those in southern Etruria.[52] Another difference often noted between the two regions is the suddenness and larger scale of the phenomenon in southern Etruria, versus the slower, more gradual process in Latium vetus.[53]

In southern Etruria, in fact, the process of abandoning small sites and occupying the big plateaux that are later occupied by the cities of the Archaic Age (Veii, Caere, Tarquinia, Vulci) is generally considered to have been completed in the brief span of a few generations, between the end of the Final Bronze Age and the very beginning of the Early Iron Age (end of the eleventh and beginning of the tenth century BC), due to deliberate planning on the part of the communities involved.[54] Probably not by chance, all major proto-urban settlements in southern Etruria show similar features, which seems to imply decision making and preparation: (1) large morphological units consisting of large, flat plateaux with steep slopes, with an area ranging from 100–120 ha to 180–200 ha; (2) proximity to rivers of regional importance; (3) accessibility to the sea; and (4) availability of a large territory with agricultural land around the settlement.[55]

In Latium vetus, by contrast, the occupation of the large plateaux that were later occupied by the cities of the Archaic Age does not appear to have begun until the advanced Early Iron Age (Latial Phase IIA/IIB, the end of the tenth and beginning of ninth century BC); this process generally followed an earlier occupation (mostly from the late Middle or Recent Bronze Age) of defended positions (*acropoleis*) connected to these plateaux.[56] Ardea, Lavinium and Satricum are clear examples of this model. Similar developments are also found in Fidenae, Ficulea[57] and possibly Gabii (although here the situation is unclear due to the presence of caves, which have completely destroyed the original elevated region to the east of the Castiglione basin).[58]

In addition, as already mentioned, the proto-urban phenomenon in Latium vetus seems to taken place on a much smaller scale than in Etruria. In fact, all Latin proto-urban centres, with the sole exception of Rome (whose dimensions will exceed 200 ha), are below 100 ha in extent, with most of them between 20–25 and 50 ha, and only a few between 50 and 80 ha. Similarly, the average distance between Latin proto-urban settlements has been calculated to be 12.9 km, with an average territorial radius of 6–7 km, which implies for each centre a territory of between 100 and 150 km^2. Again the only exception is Rome, whose distance from first-order neighbouring centres has been calculated at 25 km, possibly indicating a stronger position with control over a larger territory.[59]

As discussed in Section 1.1 the unity of these proto-urban settlements has been greatly disputed, with the arguments based on different interpretations of the scatters of pottery identified by intensive surveys on the plateaux. But nowadays most scholars seem to agree on the homogeneous nature of proto-urban settlements,[60] or at least they tend to admit that some sort of strong connection or collaboration (e.g., a 'federation') must have existed among the communities located on the same plateaux, which shared the same space, territory and resources.[61] However, it ought to be noted that 'unity' here is not intended to imply a fully built-up urban development, which is not likely to appear before at least the Archaic Age. On the contrary, as demonstrated by surveys, proto-urban settlements have to be imagined as a patchwork, with houses interspersed with gardens, areas of activity and, more rarely, formal burial sites.[62] In particular, the metaphoric image of a leopard skin has been effectively used by Marcello Guaitoli to describe this low-density settlement pattern.[63]

At a later stage of the Early Iron Age (Latial Phases IIB and IIIA, ninth and beginning of the eighth century BC) a number of small sites, often at the edges of first-order proto-urban centres, are occupied or reoccupied (after their abandonment during the Final Bronze Age), possibly indicating the intention of major centres to better control their hinterland and its resources.[64] Finally, with Latial Phases IIIB and IVA (eighth and seventh centuries BC) both first-order centres and the above-mentioned peripheral second-order centres become generators and 'central places' of small third-order aristocratic sites, so far attested mainly by funerary evidence,[65] which indicates an even more organised, sophisticated and widespread control of the countryside.

2.2. DATA: ARCHAEOLOGICAL RESEARCH IN ROME AND LATIUM VETUS FROM THE END OF THE NINETEENTH TO THE BEGINNING OF THE TWENTY-FIRST CENTURY

It is generally agreed that the national unification of Italy (1860), with the centralisation of political power in Rome as the new capital (1870),[66] created the impetus for Italian archaeology both to undertake field activities and to found or reorganise academic disciplines related to archaeology.[67] Since then, notwithstanding a certain degree of simplification implied in any generalisation, three major phases can be identified in the archaeology of Rome and early Latium.

From the foundation of the new Italian state, with Rome as its capital (1870), until the time between the two world wars, archaeology in Italy, and especially in Rome, was favoured by politicians who wanted to make use of the remnants of the glorious past of Rome and its empire to forge a modern national identity. At times this aspiration to restore the magnificence of Imperial Rome (particularly strong during the Fascist era) led to the undervaluation and consequently the destruction of evidence from less monumental times, such as the Middle Ages.[68]

After a hiatus caused by the two world wars, in the second half of the twentieth century (particularly the late 1960s until the 1980s) knowledge of early Rome and Latium again greatly increased thanks to rescue excavations and surveys. These were conducted with modern scientific methods, especially in the peripheral areas of the city and the countryside, to counter growing urbanisation and agricultural mechanisation. However, it was not until the end of the twentieth and the beginning of the twenty-first century (from about the 1980s and especially from the 1990s onwards) that long-term, planned research projects, driven by well-defined historical questions, started to multiply. In this section the development of research in Rome and early Latium will be briefly reviewed.

Given the instrumental role of archaeology in Italy soon after its unification, it is not surprising that major excavations were conducted in the Forum Romanum. Pietro Rosa's excavations (1870–80) were followed by the fundamental studies of Rodolfo Lanciani (1884–85)[69] and Giacomo Boni (1898–1911);[70] the latter, in particular, applied the 'stratigraphic method' or, better, the 'stratigraphic mentality' (built on concepts such as layers, their physical relationship and relative chronology) for the first time.[71]

As will be shown in the following chapter, Lanciani's and Boni's excavations in the Forum Romanum and in other parts of Rome provided crucial information for correctly interpreting the early phases of the city. For example, burial evidence from the cemetery of Antoninus and Faustina, excavated by Boni, and from the Esquiline cemetery, excavated by Lanciani, are fundamental to establishing the possible extent of Rome by the end of the Final Bronze Age and during the Early Iron Age. Progress in the field allowed scholars to create and refine historical pictures. In some cases their conclusions have been critically revised and corrected, but Lanciani's and Boni's contributions and the information provided by their work remain invaluable.[72]

While Giacomo Boni restricted his activity mainly to the urban centre of Rome, Rodolfo Lanciani completed several investigations in the territory around the city.[73] The exploration of Rome's surroundings was continued by Thomas Ashby, a friend of Lanciani's, who published a monumental work on the Roman Campagna (1927).[74] This scholar, moved by a great curiosity and gifted with astute intuition, can be considered the pioneer and founder of landscape archaeology in Italy.[75] Lanciani's and Ashby's work was followed by that of William Gell[76] and Antonio Nibby,[77] who distinguished themselves from previous antiquarians by combining literary sources with a direct investigation and exploration of the territory.

The difference between the two is that, while Ashby's work was systematically continued by the British School at Rome, Lanciani had no direct heirs among Italian scholars. As a consequence, only a limited amount of significant landscape research was conducted in Italy before the model proposed by the British South Etruria Survey gave new impetus to this field of research.[78] An exception is represented by the Istituto di Topografia of the University of Rome 'La Sapienza', which continued territorial research in Rome and Latium, for example, with the work of Giuseppe Lugli[79] and Ferdinando Castagnoli,[80] and which partially revived the survey tradition of the British School of Rome with projects such as Latium Vetus and the Forma Italiae, as discussed later.

Outside Rome, several systematic excavations were conducted by Raniero Mengarelli and Umberto Antonielli in different Latin sites,[81] while the well-known Orientalizing 'princely tombs' (e.g., from Praenestae) were discovered and mostly looted.[82] Another archaeological enterprise that was planned during the period of political enthusiasm following Italian unification was the project of the *Carta Archeologica d'Italia* (Archaeological Map of Italy). Launched between 1881 and 1889 under the guidance of Gamurrini, Cozza and Pasqui and later carried out by Mengarelli, the project aimed to collect and register all archaeological evidence found in Italy on maps at the scale 1:50,000. It was too ambitious, however, and soon failed. The first edition was not published until the mid-twentieth century.[83]

Before and between the two world wars, apart from the exceptions mentioned, a limited amount of topographic and excavation research activity (carried out according to modern scientific criteria) was undertaken in Rome and Latium vetus.[84] By the late twentieth century, however, as mentioned earlier, much of the archaeological investigation in Rome and the surrounding region was motivated by the need to counter growing urbanisation and agricultural mechanisation. From the late 1960s through the 1980s many rescue excavations and surveys adopting modern standards of scientific research were carried out by a wide variety of institutions, ranging from universities to superintendences,[85] to volunteer organisations,[86] to international organisations based mainly in Rome.

A series of surveys and territorial investigations, for example, were conducted by the Istituto di Topografia within the Formae Italiae Project, which resumed and continued the work of the *Carta Archeologica d'Italia* referred to earlier. Within the Latium vetus region, in particular, the following sites were investigated: Ardea and its territory in the coastal area south of Rome;[87] Collatia to the north-east of the city;[88] Tibur-Tivoli and its surroundings farther east on the Anio River;[89] Praeneste-Palestrina to the east, at the foot of the Praenestini Mountains;[90] Antemnae[91] at the border of the most ancient territory of Rome (the *ager Romanus antiquus*) to the north of the city; Bovillae,[92] Tellenae[93] and Apiolae[94] to the west of the Alban Hills and Cora[95] to the east of them; and finally Astura[96] on the coast at the southern limit of Latium vetus.

Another major project devoted to the territorial investigation of Latium vetus was promoted by the Italian CNR, or Consiglio Nazionale delle Ricerche (National Research Council), and conducted by Lorenzo Quilici and Stefania Quilici Gigli, with the aim of better understanding settlement patterns between the seventh and sixth centuries BC.[97] At the same time, the catalogue of the exhibition *Civiltà del Lazio Primitivo* (Civilizations of primitive Latium; Rome 1976) shows clearly that most excavations undertaken in those years (mainly in funerary contexts) began with casual discoveries made during the construction of buildings or roads or in connection with agricultural activities.[98]

Since then, preventative research and rescue excavations have become common practice in the management of the archaeological heritage by the superintendences, often in collaboration with universities. However, at the end of the twentieth century and the beginning of the twenty-first century, a series of long-term scientific projects, driven by specific historical questions, were initiated and the number of new projects (both in Rome and in the surrounding region) continued to increase under the initiative of established and younger scholars.

During the late 1970s and early 1980s, for instance, Anna Maria Bietti Sestieri directed the first scientific survey in the territory of Rome[99] and the excavation at Osteria dell'Osa, which remains the only fully published excavation of an Early Iron Age cemetery in Latium carried out with modern techniques.[100] As already emphasised, our understanding of Early Iron Age Latin communities is unfortunately limited by the fact that most excavations carried out in Latin cemeteries from the late 1960s to the early 1980s remain unpublished.[101] In the late 1980s and early 1990s, another survey project was conducted in the coastal area of Rome (the territory under the jurisdiction of the Ostia Soprintendenza).[102]

In the same years, territorial research was conducted in Etruria by a group of archaeology students in collaboration with the Soprintendenza and local authorities.[103] This research, initially focused on settlement organisation during the Final Bronze Age in southern Etruria, was subsequently extended to include nearby Latium and chronologically expanded to embrace all the Bronze and Early Iron Ages.[104] The activity of the Regione Lazio (Regional Council) also falls within this framework of research. The archaeological department of Regione Lazio, in fact, has promoted territorial surveys on a local scale, as well as archival and bibliographical research, in order to produce a complete catalogue of pre- and proto-historic sites within the territorial limits of the different *provincie* (local administrative units below the region or county and above the municipality).[105]

This recent research distinguishes itself from earlier work in two main ways: firstly, it places greater emphasis on methodological and theoretical issues in the design of research projects, and states explicitly in each publication what procedures and criteria have been adopted in the field; secondly, it is inspired by a more mature and modern approach to heritage management, in which preventative and carefully planned, non-destructive investigations (such as surveys and territorial studies) are undertaken alongside more traditional rescue excavations, generally conducted under strict time and economic constraints.

In this light, during the 1990s a collaboration between the Soprintendenza of Rome and the University of Rome 'La Sapienza' was established to provide an unprecedented collection of topographical information covering the whole territory of the city and the surrounding area; this would entail assessing published and archival information and gathering new data by means of field surveys. Topographical data gathered by a geographical information system would cover both the urbanised area within the Aurelian city walls of Rome (270–73 AD) and the surrounding territory.[106] Similarly the Comune di Roma (Municipal Council) and the Provincia di Roma (Provincial Council) have undertaken an analogous process of computerisation of topographical and archival data.[107]

Besides these territorial projects, which have provided new data and better access to existing data on Rome and its surroundings,[108] new excavations conducted in the archaeological and historical centre of Rome in the second half of the twentieth century have shed new light on the origin and early phases of the city. For example, the excavation of the Regia[109] and the investigation of the S. Omobono sanctuary in the Forum Boarium[110] have updated the picture of a 'Great Rome of the Tarquins', already envisaged by Giorgio Pasquali in the late 1930s[111] but recently contested by historians such as Emilio Gabba.[112]

Recent excavations conducted by Alberto Cazzella in the area of the Giardino Romano on the Capitoline Hill[113] and by Andrea Carandini on the northern slope of the Palatine Hill and in the area of the Vesta sanctuary[114] have revealed new, contentious evidence dating back to the Bronze Age and the late Early Iron Age. This has revived a long-standing debate about the origins of Rome and the earliest phases of the city. Carandini uncovered an earthen wall around the Palatine and an aristocratic house in the area of the Vesta sanctuary, dating back to between ca. 775 and 725 BC. Therefore, these monuments might be related to the foundation of Rome (traditionally attributed to Romulus and dated to 753 BC)[115] and the institution of a centralised power (kingship), which might imply the beginnings of the city-state model in the western Mediterranean by the middle of the eighth century BC.[116]

Shifting the focus again from Rome to the regional level, it is worth mentioning the activity of several international institutes based in Rome or abroad, among which the North European Institutes are particularly active in Latium.

For example, scholars from the Netherlands have been conducting excavations in the ancient Latin city of Satricum[117] and have carried out surveys in southern Latium. The Pathways to Complexity Project, which investigates urbanisation processes and settlement dynamics in Italy during the first millennium BC, has adopted a supra-regional focus (which includes some regions in southern Italy), paying particular attention to historical processes as well as to environmental and geomorphologic reconstructions.[118]

A joint team from the Northern European Institutes in Rome, in collaboration with local authorities, has investigated the Latin site of Ficana,[119] identified with the low hill of Monte Cugno, which is located along the left bank of the Tiber about 20 km to the south-west of Rome. In addition, several international groups are conducting research in Crustumerium, one of the larger Latin proto-urban centres located at the site of Marcigliana Vecchia on a small hill dominating the Tiber plain, about 15 km to the north of modern Rome along the Via Salaria.[120]

2.3. DATA COLLECTED AND USED IN THE PRESENT STUDY

As shown in the preceding section, the ongoing interest of scholars in the city of Rome and its territory has produced a great number of studies, which range from antiquarian research to modern scientific projects. Since the 1970s the knowledge of the topography of Rome and Latium vetus has increased enormously thanks to numerous studies conducted according to modern standards of investigation. This research, along with many other recent studies, has provided the necessary foundations for the work described in this volume: recent excavations conducted in the heart of Rome have shed new light on the origins of the city and the foundation of its political institutions, and field surveys continue to provide enormous amounts of data to delineate the picture at the territorial and regional levels.

The Territorial Sample

To study the landscape of Rome at the territorial level, the original intention was to collect all archaeological evidence from the Middle Bronze Age to the end of the Republican Period within eight to nine Roman miles[121] from the centre of Rome known from archival and bibliographical sources (from 1900 until today). At an advanced stage of the bibliographical research, it became clear that a review of all archival evidence for Rome and its territory would be an enterprise far beyond the ability of a single researcher with a limited amount of time to complete the work (i.e., a PhD candidate). In addition, due to the intensive urbanisation of contemporary Rome, to consider the whole territory of the city as a unity would result in clear biases in the analysis of the distribution and spatial location of sites. Therefore, a different strategy was adopted and a sample area was chosen to 'represent' the territory of Rome as a whole. Analyses at the territorial level and the study of the Roman rural landscape from the Middle Bronze Age to the end of the Republican Period were carried out in this area instead, although it is fully acknowledged that it is not possible to draw general conclusions or interpretations about the entire territory of Rome from a limited sample area (as discussed later).

Because of the extent of contemporary Rome, most of the territory within the *ager Romanus antiquus*, especially on the Latin side, is extensively built up; however, at the north-eastern limit of the modern city, about 15–16 km from the centre, a district which is not fully urbanised was identified as a particularly suitable region for the case study at the territorial level, both for historical reasons and for the quality of research conducted in the region. In order to avoid boundary issues in the analysis of site distribution and spatial location, the research at the territorial level focused on an area with specific natural geographical borders; in particular, the chosen area coincided with the basin of several tributaries of the lower course of the Tiber, as defined by the geographical service of the Regione Lazio, from which digital data were obtained. Today this area is administratively included in the IV Circoscrizione (4th Municipal District) of Rome (cf. Section 5.2; Figs. 40 and 41).

From an historical point of view, though the sample area is not strictly integrated into the most ancient territory of Rome, *ager Romanus antiquus*, during the Bronze and the Early Iron Ages it was included between the territories of middle-sized proto-urban centres, such as Crustumerium, Fidenae and Ficulea (and, by a later stage of the Early Iron Age, Casale Capobianco).[122] According to the literary tradition, this area was most likely one of the first territories conquered by Rome during the Regal Period[123] and was definitively incorporated in its territory by the Archaic Age, as mentioned by literary sources[124] and demonstrated by archaeological evidence.[125] Therefore, it offers a particularly interesting micro-case for studying (1) the relationship between Latin proto-urban centres and their hinterlands; (2) the dynamics among competing Latin proto-urban centres during earlier phases; (3) the nature and development of the territory of Rome during the first expansion of the city; and (4) settlement patterns during the Archaic Age and the Republican and Early Imperial Periods in an area very near to the city, which seems particularly important for shedding new light on issues such as the origin and the development of the villa.[126]

At the same time, it has to be kept in mind that results from the analysis of the sample area are valid only at a local level and cannot be extrapolated to the whole territory of Rome. For example, in the Suburbium Project, research in different *circoscrizioni* (municipal districts),[127] or even within the same district,[128] have produced slightly different results. In spite of these limitations, the micro-case study of this work offers a valuable point of comparison for analyses conducted at the regional level (Latium vetus, Chapter 6) and for similar studies conducted in the same region or in other parts of central Italy.

Finally, the sample area appears to be particularly suitable for detailed study and analysis because in recent years it has been repeatedly investigated by means of modern landscape methodologies and survey techniques. In fact, it was included in the territorial study conducted by Lorenzo and Stefania Quilici from the late 1970s onwards (Latium Vetus Project)[129] and was also restudied by the Suburbium Project of the University of Rome 'La Sapienza',[130] which resulted in a significant increase in the evidence available (cf. Fig. 10). The data sample, with particular reference to the research aims and methodologies of the Suburbium Project and the site classification criteria adopted in the present work will be further discussed in Section 5.2.

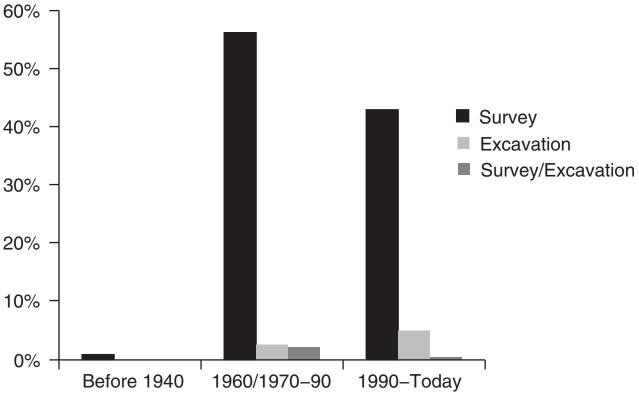
Figures 9, 10 and 11 show the contribution of different types of research and research projects to our understanding of the sample area at the territorial level. With reference to Figure 10, in particular, it should be noted that the Latium Vetus Project and the Suburbium Project were aimed at a global investigation of the landscape, from pre-history to the Middle Ages, in the first case, and from the ninth century BC to the sixth century AD (with attention to older pre- and proto-historic phases) in the second case,[131] while projects conducted by pre-historians were focused only on pre- and proto-historic phases.[132]

It is not surprising that total landscape investigations, such as the Latium vetus and Suburbium Projects, provide the greatest amount of data and a better knowledge of large areas than do other studies (Figs. 9 and 10). It is also clear from Figure 11 that the recent Suburbium Project discovered a significant percentage of new sites compared with research projects conducted before the 1990s, at least in the area under study. By contrast, in the Pontine Region Survey, in the specific area of Nettuno, for example, comparison between research conducted in the 1970s and in recent years showed a 65% loss of archaeological evidence.[133] But this seems, so far, to be an exceptional case in the region.

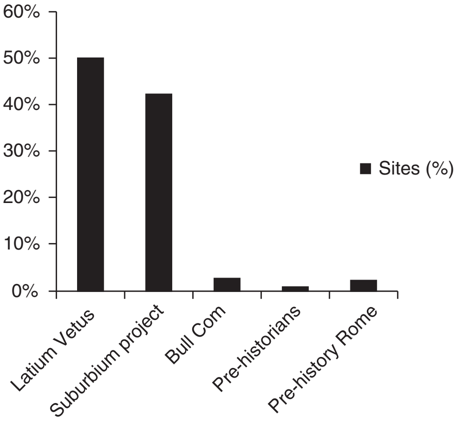
The Regional Sample

Nature of the Data

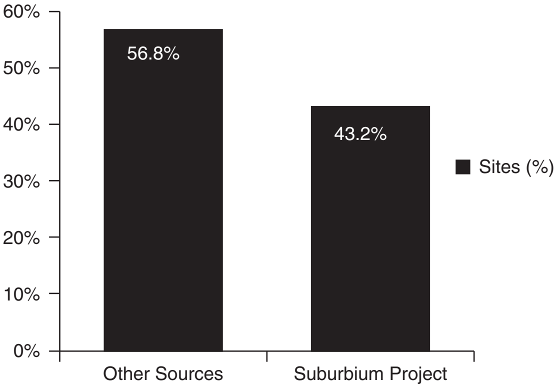
At the regional level, all settlements in Latium vetus (as defined in Section 2.1) from the Middle Bronze Age to the Archaic Age known from published works were collated. Volumes in the Forma Italiae and Latium vetus series provided valuable primary information, including excavation and surveys reports, reviews, exhibitions catalogues and conference proceedings (see Section 2.2 for a review of previous research in Latium vetus). All this material provided a great amount of data, which was necessarily rather inhomogeneous, having been compiled from such different sources.



9. Territorial sample: site distribution according to research project type and years of investigation.



10. Territorial sample: site distribution according to principal research projects.



11. Territorial sample: comparison of new sites discovered by the Suburbium Project and sites discovered by earlier projects.

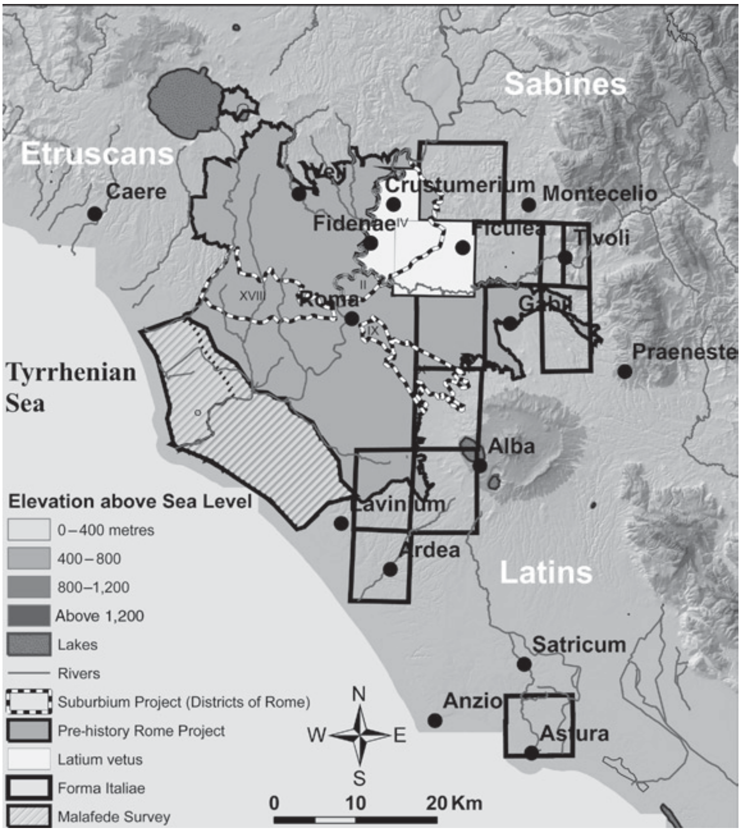
Such material, in fact, included systematic data and non-systematic or occasional information; and even among systematic data, different research designs and sample strategies had to be taken into account. However, a number of recent synthetic studies which have provided new interpretations and more refined and exact typologies and chronologies have been helpful in revising and assessing older and less homogeneous data. In this sense it was particularly advantageous to compare data collected from verifiable published works against the newly produced *Repertorio dei siti protostorici del Lazio. Provincie di Roma, Viterbo e Frosinone* (Catalogue of proto-historic sites in Latium. Provinces of Rome, Viterbo and Frosinone), edited by Clarissa Belardelli, Micaela Angle, Francesco di Gennaro and Flavia Trucco.[134]

In this new catalogue, as well as in the previous one, covering the provinces of Rieti and Latina,[135] all pre- and proto-historic sites in Latium known from bibliographical, archival research or in some cases new excavations and surveys have been rechecked and redated (with new autoptic analysis of the pottery, when necessary) according to the most recent typological and chronological criteria. Thus these catalogues are a rich source of homogeneous and reliable data and provide a good benchmark against which to check data from other sources.

Thanks to the generosity of Dr Clarissa Belardelli, I was able to consult the new catalogue before it was published. This allowed me to (1) integrate data already collected from published sources with new unpublished data and (2) to check the interpretation and dating of most settlements already reviewed and to refine their chronology. In particular, this work made it possible to establish a more precise and refined chronology for Bronze Age sites, distinguishing earlier and later phases within the Middle Bronze Age (1–2 and 3) and within the Final Bronze Age (1–2 and 3). However, as mentioned in the preface, since the manuscript did not become available to me until the later stages of my own research, it was possible to apply the refined chronology to the spatial analyses but not to the analysis of site location in relation to environmental variables. Applying the new chronology to the latter would certainly have given a more detailed picture of settlement patterns in Latium vetus during the earliest phases, but it would not have affected the main arguments of this work.

Another problem, derived from the inhomogeneity of the sources available, was that of data completeness. In fact, as already mentioned, data on Latium vetus settlements derive from different types of research (surveys, excavations and occasional discoveries) conducted since the end of the nineteenth century (see Section 2.2), with different purposes and methodologies. However, as shown in Figure 12 most of the territory of Latium vetus has also been the subject of fairly recent systematic surveys and intensive research.

As mentioned in Section 2.2, the area of Rome was investigated by Anna Maria Bietti Sestieri in the 1970s and 1980s[136] and more recently by the


Sabines
Etruscans
Caere
Veii
Crustumerium
Montecelio
Fidenae
IV
Ficulea
Tivoli
XVIII
Roma
II
IX
Gabii
Praeneste
Tyrrhenian Sea
Alba
Lavinium
Ardea
Latins
Satricum
Anzio
Astura
Elevation above Sea Level
0–400 metres
400–800
800–1,200
Above 1,200
Lakes
Rivers
Suburbium Project (Districts of Rome)
Pre-history Rome Project
Latium vetus
Forma Italiae
Malafede Survey
N
W
E
S
0
10
20 Km

12. Principal survey projects conducted in Latium vetus.

Suburbium Project.[137] The coastal area was investigated in the late 1980s and early 1990s, integrating Bietti Sestieri's research on the territory of Rome.[138] To the north of Rome, the area around Crustumerium, Fidenae and Ficulea was investigated by Lorenzo and Stefania Quilici in the 1980s and 1990s[139] and then again by the Suburbium Project.

The area around Tivoli and Montecelio was studied by Fulvio Cairoli Giuliani[140] and then Zaccaria Mari, both as part of the Forma Italiae Project and by other independent researchers.[141] The Formae Italiae Project, though not always conducted according to modern survey criteria, covered most of the centre of the region from the north to the south.[142] The area of the Alban Hills, investigated at the end of the eighteenth and beginning of the nineteenth century, has been studied again in the past fifty years by various scholars, such as Alessandro Guidi[143] and Pino Chiarucci.[144] Finally, the coastal area between Ardea and Lavinium has been investigated by the Topography Institute of the University of Rome 'La Sapienza',[145] while Anzio, Satricum and the Pontine Plain have been and are currently being studied by Peter Attema and his team.[146]

In addition, locational settlement analyses, conducted in the present study at the regional level using the rank-size rule, spatial efficiency index, central place theory and Voronoi diagrams, are more likely to be affected by a loss of data at the higher end of the spectrum – that is, in the case of primary or second-order settlements – and these settlements are much less likely to have been overlooked in a region so intensively studied.

Finally, visibility issues might be related, especially in the case of pre- and proto-historic sites, to geomorphologic, depositional and post-depositional factors or to the low visibility of pre-historic coarse ceramics, which are sometime very scarce in surface findings or are difficult to date precisely.[147] For example, the Pontine Region Survey raises the possibility that geological factors (such as recent alluvial deposits) and pre-historic visibility issues are responsible for the low density of pre-historic and proto-historic sites in the investigated area.[148] Therefore, as will be discussed further, on the one hand, pre- and proto-historic sites might be less visible because deposits might have been displaced from hilltops and/or covered by recent alluvial deposits in lowland and fluvial areas; on the other hand, for the same reasons sites which are visible are more easily identifiable on higher and hilltop locations.

This seems to imply that the traditional model proposed by Renato Peroni and his school of pre- and proto-history, according to which preferred settlement locations during the Bronze and Early Iron Ages in central Italy should be progressively hilltops and plateaux, might be biased by the nature of the data available. However, while more intensive excavation and more environmental studies within excavations and survey projects are desirable,[149] for the moment the overall consistency and coherence of the historical interpretation remains the only pragmatic criterion for judging the accuracy of the model.

Criteria for the Identification and Measurement of Settlements

It must be said at the outset that Latin settlements with doubtful dating or settlements which are only hypothetically identified by literary sources[150] have also been taken into account in this work; nonetheless, they have been clearly identified as different from those based on archaeological information. Moreover, a number of settlements have been identified even when the evidence is limited to a few sherds (this is often the case for Bronze Age sites) on the basis of the following assumptions, elaborated by the Roman school of pre- and proto-history in its study of settlements pattern in southern Etruria: (1) the unity of the settlement and (2) the existence of the settlement on a hilltop even when the material is found on the ridges or at the base of the slopes.[151] The first assumption implies that a well-defined geomorphologic unit (hilltop or plateau) is a good estimate of the extent of the ancient settlement, while the second assumption implies (especially for the Bronze Age) that finds on the slope of small hills or plateaux are displaced from their ridges.

These assumptions are based on a partially circular argument: because a number of extensive excavations and surveys have confirmed that the most popular settlement model in Bronze and Early Iron Age central Italy is that of settlements on plateaux or hilltops, even scarce evidence is used as a basis for identifying similar settlements. Hence, these assumptions are open to challenge, because (1) they seem to oversimplify the complex relationship between surface evidence and below-ground ancient deposits; and (2) they tend to artificially reinforce a model verified by survey and only limited excavations. In addition, because of the geomorphologic conditions of the region, it is easier to identify pre- and proto-historic deposits on the surface of plateaux, which overemphasises these types of sites within a sample.

However, pragmatically, this seems to be the only possible (or at least the most reasonable) means of generating any discourse on and interpretation of settlement patterns in the region. It has been recommended that more intensive excavations might partially resolve the issue, but would require an investment of enormous resources (compared with those of survey research) and might not be any more conclusive. Therefore, as suggested by Vanzetti, the model, though not perfect, is still valid and the results have to be judged by the overall coherence of the historical interpretation.[152]

When possible the area of settlements has been calculated in the present work on the basis of full-coverage surveys and/or extensive excavations (this is the case of most primary Early Iron Age sites). For example, surveys conducted on the plateaux of several sites (e.g., Gabii, Ardea, Lavinium–Pratica di Mare and Crustumerium),[153] have identified scatters of pottery which were too close to each other (in the range of tens or a few hundreds of metres) to be considered 'separated hamlets',[154] at least by the beginning of the eighth century BC, and possibly even earlier if the location of the funerary areas is taken into account.[155]

Where surface evidence is limited on the basis of the aforementioned assumptions, clearly defined morphological and topographical units have been considered to be fairly good indicators of 'unitary' settlements. In addition, when information is available, the presence of funerary areas regularly distributed all around the plateaux has been considered a good indicator of the presence of a unitary settlement on those topographical units. As already mentioned, it has been observed that by the Final Bronze Age and the beginning of the Early Iron Age, with the formation of nucleated proto-urban centres, formal burial areas are generally removed from the inhabited area and form a sort of ring around the settled plateaux.[156] Estimations suggested by previous studies have also been taken into consideration.[157]

Finally, in the case of low-density material, a lack of precise measurements of sites and the absence of a clear morphological unit, settlements of the conventional measure of 1 ha have been assumed, but only for those cases where enough contextual evidence or agreement among scholars would suggest the effective existence of a substantial human occupation.[158]

2.4. METHODOLOGY AND THEORETICAL ISSUES

Settlement Patterns and Locational Models: Some Theoretical Issues

The present volume presents a series of settlement analyses at the territorial and regional levels, applying, for example, the rank-size rule, spatial efficiency model, central place theory and Voronoi diagrams, all of which will be considered under the rubric of 'spatial or locational analysis'. As Clarke recognised, spatial analysis has always been part of the interest of traditional Montelian archaeology, which is based on typological studies and distributional maps.[159] During the early 1920s in Britain, under the influence of geographers, Cyril Fred Fox combined archaeological and environmental data in the analysis of a region over a long period and published *The Archaeology of the Cambridge Region* (1922).[160]

Studies based on Fox's were carried out by other scholars, but it was only at the end of the 1960s that the spatial approach was fully readopted, once again under the influence of the geography school,[161] with the work of David L. Clarke, *Analytical Archaeology* (1968),[162] and Claudio Vita-Finzi and Eric Higgs's site catchment analysis, which expanded on a model of Michael Chisholm.[163] At that stage scholars such as Clarke were conscious that 'inspection or eyeballing were no longer sufficient nor an end in itself' and that there was 'archaeological information in the spatial *relationship* between things as well as in things in themselves',[164] as demonstrated by Clarke himself and by Ian Hodder and Clive Orton.[165]

In the 1970s and 1980s, several archaeologists developed and used a number of 'locational analyses',[166] which will be investigated in the present study and applied to Bronze and Early Iron Age Latium vetus. In the 1970s, Steponaitis developed and applied the spatial efficiency model, which was subsequently overlooked and not widely used. In the 1980s, Johnson applied the rank-size rule (widely used in geography) to the Susiana plain (Iran) and Warqa area (Iraq) in the fourth and second millennia BC,[167] and since then it has been widely applied in several geographical and chronological contexts,[168] including Early Iron Age middle Tyrrhenian Italy, in a pioneering study by Guidi.[169]

Central place theory, developed by Christaller to explain the regular location of southern Germany cities during the 1930s,[170] inspired a number of archaeologists who were interested in understanding how cities and towns developed hierarchies of economic activity, in both historical and pre-historical times.[171] Finally, multiplicatively weighted Voronoi diagrams, quite popular in geography,[172] have been introduced to the discipline of archaeology by Ulla Rajala.[173]

Despite the development and flourishing of locational models, they soon came under attack for various theoretical and methodological reasons, which can be summarised as follows. Firstly, locational models were elaborated for the study of modern societies based on a 'maximising economy', which cannot be applied to pre-capitalistic societies;[174] secondly, there were problems related to the nature of the archaeological evidence itself, such as the reliability of distributional patterns (which could be altered by post-depositional factors) and biases due to the representativeness of sites (partial survival, incomplete recovery, etc.); thirdly, there was the problem (especially for the rank-size rule) of defining the exact size of settlements.

In relation to the second issue, attention to environmental factors in the formation of archaeological deposits has so far been paid only to work in the Pontine region, directed by Peter Attema,[175] and in the field-survey investigation of pre- and proto-historic evidence in the area of Rome, conducted by Anna Maria Bietti Sestieri.[176] And while more studies in this direction would be valuable, for the moment, because of its 'consistency', the general reconstruction and historical interpretation,[177] possibly corroborated by different types of analyses and different types of evidence, remains the only pragmatic approach.

The third issue, settlement size, is particularly important because a direct and proportional relationship is generally assumed between size and population, and between population and site functionality and hierarchical level.[178] However, it is difficult to establish the exact extent of settlements and their development through time, especially when they have not been extensively excavated or surveyed and the calculation is based on theoretical estimations.

As discussed in the preceding section, in order to define and calculate the extent of settlements in this study, surveys and excavation data have been considered (in a limited number of cases). When full-coverage surveys or extensive excavations are lacking, the assumptions elaborated by the school of pre- and proto-history have been adopted[179] and well-defined morphological units such as hilltops and plateaux have been considered to provide a good estimation of the extent of a settlement even when only scarce material has been found on the top of the plateaux or along the ridges and slopes.[180] In addition, when considering Early Iron Age settlements, and in particular large proto-urban settlements located on the plateaux later occupied by Archaic cities, the localization of formal burial areas has provided additional topographical elements to aid in establishing the hypothetical extent of the inhabited area.[181]

While the second and third issues are common when one is dealing with archaeological data and must be managed on a case-by-case basis, the first is more theoretical and needs a justification. Quoting Renfrew,[182] Haselgrove affirmed that 'in spatial terms, the transfer of goods by distribution does not differ from market exchange'.[183] Moreover, as Johnson observed, it is a matter of degree, since 'effort minimization may appear to a greater or lesser extent in the context of market, re-distributional, or mixed economy'.[184]

To conclude, following Johnson, locational theory offers a series of abstract models which provide a useful frame of reference for the analysis and interpretation of field data.[185] This is reinforced by Collis's study, which while it specifically refers to central place theory, is equally valid for locational models in general. He stated that 'models of this sort are not usually universally wrong or right.… If the model does not fit we should ask why; if the model does fit, we should also ask why'.[186] Recent applications of locational models, now in conjunction with information technologies, demonstrate that such models are still useful and can make a positive contribution to the analysis of the archaeological evidence and the subsequent elaboration of the historical reconstruction.[187]

Geographical Information Systems, Determinism and Space: Current Theoretical Debate on the Use of GIS in Archaeology

Analyses performed in the present study at both the territorial and regional levels were based on routine applications of geographical information systems (GIS).[188] Therefore, the old debate on determinism and space, recently revived by the reintroduction of spatial analyses (see the preceding section) in archaeological studies enhanced by technological tools cannot be avoided.

The main application of GIS is in the field of spatial analysis, which focuses on measurable, mathematical entities and their relationships (Cartesian space). Thus, in the mid-1990s, GIS applications were criticised for their return to positivism and environmental determinism (processualism).[189] At the same time, within landscape studies greater attention was paid to the study of more cultural and social dimensions of space and environments (post-processualist perspective). [190] It is probably true that most of the analyses carried out until that time with GIS routines, such as the classical study on the island of Hvar,[191] were based on environmental and economic analyses.

However, the GIS studies carried out later resulted mainly in cost-surface analyses and viewsheds, which allowed archaeologists to bring cultural aspects into their analyses.[192] While distance measures are based solely on the Cartesian spatial property of the data, many GIS applications provide tools to generate cost surfaces, which allow the measurement of proximity and also take into account the nature of the terrain (elevation, slope, barriers such as rivers, etc.).Therefore, while settlement models based on linear distance measures have to be taken as an ideal, though useful, approximation of the actual pattern observed, cost surfaces allow models that are somehow closer to the complexity of reality.[193]

Similarly, GIS applications have generated a new interest in visibility analyses, which almost entirely escaped the quantitative revolution of the new archaeology, by applying two mainstream concepts: 'viewshed' (or 'field of view') and 'inter-visibility' (or 'line of sight'). The first refers to an area visible from an established fixed location, while the second indicates the presence or absence of a line of sight between two features.[194]

Viewsheds, justified on the theoretical basis of hermeneutics,[195] seemed to be the best medium for modelling past perceptions of natural and human landscapes.[196] But, as Van Leusen argued, cost-surface analysis and viewsheds could also be considered deterministic, as they are based on digital terrain models (DTM), or physical models of the earth's surface, and he suggested terminating the useless debate between processualists and post-processualists.[197] To this Gaffney replied that there is a difference between considering measurement and physical data as ends in themselves and their use to achieve certain results.[198]

Llobera, proposing a GIS model to analyse the 'topographic prominence' of Bronze and Iron Age monuments in the area of the Yorkshire Woods, has offered a new, rigorous and theory-laden methodology to investigate past perception, which appears promising.[199] But in spite of the progress reported here, there are still some serious biases inherent to GIS technologies themselves. Firstly, as Van Leusen observed, a general, 'global' knowledge of the landscape based on personal experience could never be reproduced in an artificial model, even if one could take into account all the physical, 'local' variables.[200] Secondly, as Gaffney, in agreement with other scholars, stated: 'A fundamental problem alongside the privileging of sight is the absence of a temporal dimension within most forms of GIS'.[201]

To conclude, as Van Leusen pointed out, it must always be born in mind that GIS- generated models are inevitably different from reality, and efforts must be made to try to assess how significant the difference is.[202]

2.5. CONCLUSIONS

Latium vetus is a region which escapes precise geographical definition, being an area of intense encounters and exchange between Etruria to the north and Campania to the south. Defining its boundaries thus appears to be more an historical than a geographical or topographical matter (Section 2.1).

The present work accepts the interpretation which connects the most ancient territory of the Latins (Latium vetus) with the first clear evidence of a sort of 'cultural' or 'ethnic' identity of these people. This evidence can be tied archaeologically to the first appearance of a Latin material culture in the region (Latial Period I) at the end of the Final Bronze Age and beginning of the Early Iron Age, around the end of the eleventh and beginning of the tenth century BC. In addition, as some scholars emphasise, the tradition of the Populi Albenses, who were united in a religious (and possibly political) league whose main sacred site was on Mons Cavo in the Alban Hills, might be considered representative of this earliest communal Latin identity and dated to a similar time. Therefore, the limits of Latium vetus have been determined by comparing the location of the so-called Populi Albenses with the core diffusion area of the archaeological evidence of the Latin culture.

The ongoing interest of scholars in the city of Rome and the surrounding area of Latium vetus since the end of the nineteenth and beginning of the twentieth century to the present has produced a great amount of data, which has made this research possible (Section 2.2). Moreover, recent research and studies have provided new data and intellectual tools to re-examine old data, which has facilitated an innovative study on urbanisation and state formation in this area.

The territorial sample area used in this research actually falls outside the limits of the most ancient territory of Rome (*ager Romanus antiquus*), but it was chosen both for its historical interest and for the quality of the research conducted there. During the Bronze and Early Iron Ages, the area was part of the territories of middle-sized Latin centres, such as Crustumerium, Ficulea and Fidenae, and provides useful information about the relations among these centres and with their hinterlands. Later, at least from the Archaic Age onwards, the area became part of the territory of Rome and therefore can open a window (although one must be aware of the limits of this framework and the specific local value of the results) on Roman land management and exploitation in the immediate surroundings and shed new light on related but contentious issues such as the origin and development of the villa.

The regional sample, comprising all known settlements in Latium vetus from the Middle Bronze Age to the Archaic Age, could potentially be affected by biases of homogeneity and completeness, due to the inhomogeneity and variety of sources. Research conducted in the region since the end of the nineteenth century (excavations, surveys, occasional discoveries), in fact, has produced an amazing amount of archaeological data (Section 2.2), which is by necessity rather inhomogeneous in relation to aims, methodology and available technology.

The issue of completeness is mitigated by the great amount of research conducted in the region and by the types of analyses conducted in this study. In fact, these analyses, employing the rank-size rule, the spatial efficiency index, central place theory and Voronoi diagrams, are more likely to be affected by the loss of large or medium-size settlements. And these settlements, given their dimensions, are less likely to be overlooked by such intensive archaeological investigation.

It is possible to resolve the issue of homogeneity (e.g., in relation to site classification, dating, etc.) because the catalogues of all pre- and proto-historic sites in Latium, recently published by Regione Lazio, have been systematically revised according to the most recent classification and dating criteria. Thus they provide not only an invaluable source of reliable and homogeneous data, but also a model against which to compare and reconsider evidence from other sources.

The issue of visibility of pre-historic and proto-historic sites, due to both geological and pedo-genetic factors or the visibility of pre-historic pottery itself, remains unresolved, however, because further environmental samples and excavation and survey projects are required in the region. Therefore, while the problem has been acknowledged, the general 'consistency and coherence' of the results and their explanation should be sufficient to validate the historical interpretation.

Additional methodological and theoretical issues are related to settlement analysis, also with particular reference to the use of GIS (Section 2.4). Both environmental and spatial analyses have been highly criticised: the former as positivistic and deterministic, the latter as based on a 'maximising economy', which is considered anachronistic in pre-capitalistic societies. In addition, many critical issues have to be taken into account in settlement pattern analysis.

Firstly, there is no demonstrated link between patterns detected in the archaeological evidence and real cause and effect relationships. Secondly, there may be correlations between variables; for example, two apparently related variables might actually be jointly driven by a third unknown variable. Environment and human behaviours interact dynamically, and here, too, it is difficult to detect real cause and effect relationships.

Finally, as already mentioned in the discussion of the data samples, any number of biases might exist in data acquisition, such as the correlation between primary and secondary data, combining systematic data acquisition with occasional and non-systematic information, taking into account depositional and post-depositional factors and being aware of different research design and sampling strategies. Nevertheless, quantitative analysis and abstract models can still be employed as useful frameworks in the analysis and interpretation of archaeological data, especially if they are compared against different types of evidence and independent lines of argument.[203]

THREE

THE CITY LEVEL: ROME FROM A SMALL BRONZE AGE VILLAGE TO THE GREAT CITY OF THE ARCHAIC AGE

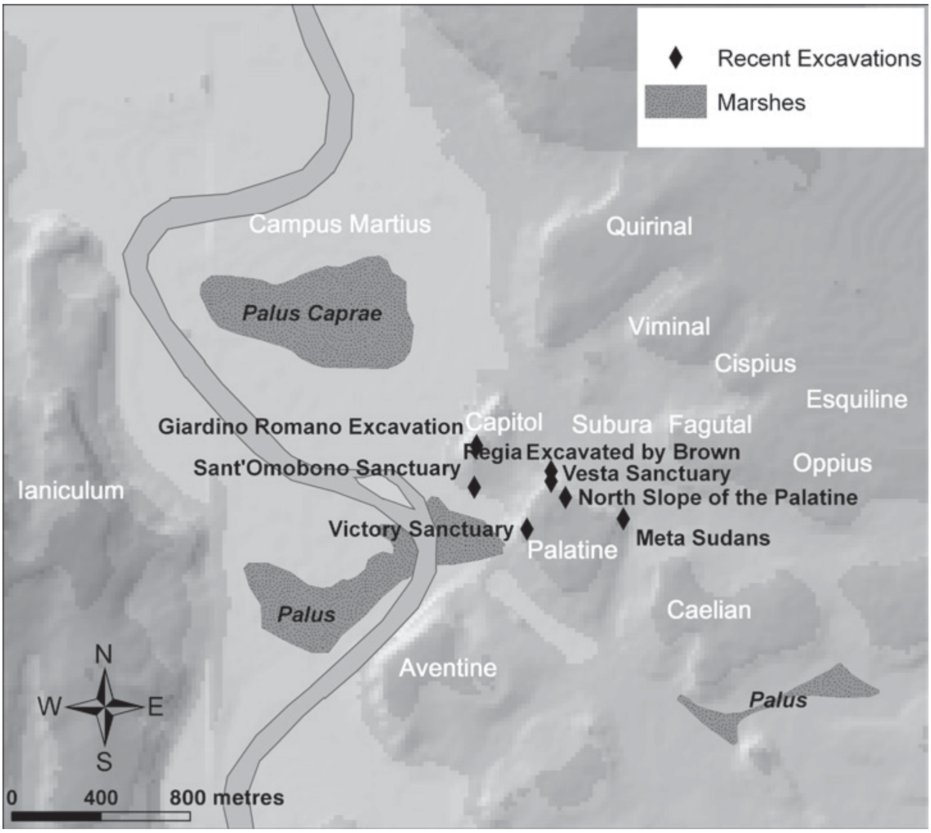
3.1. ROME FROM THE BRONZE AGE TO THE ARCHAIC AGE: ARCHAEOLOGICAL EVIDENCE

Premise

In the following sections, the development of Rome from the Bronze Age to the Archaic Age is reconstructed on the basis of archaeological evidence, taking into consideration recent excavations conducted in the historical and archaeological centre of the city (Fig. 13), which have inspired new research and revitalised the ongoing, and still unresolved, debate on the origin of Rome and the earliest phases of Roman history.

Most scholars now seem to agree on the potential of archaeological research to shed new light on the very beginning of Rome and the earliest phases of Roman history, at least from the second Regal Period onwards.[1] At the same time, the challenges and difficulties of comparing and combining archaeological sources and literary accounts in the historical reconstruction of early phases[2] remain. Some scholars deny the possibility of comparing archaeological evidence with literary accounts for times earlier than the Archaic Age or the Early Republican Period,[3] while other scholars are more optimistic.[4]

Both settlement and funerary archaeological evidence from Rome, dating from the Bronze Age to the end of the Orientalizing Age, has been compiled and taken into consideration to reassess the historical development of the city. However, from the Early Iron Age onwards, only burial sites have been plotted on the maps (see Figs. 17–21) showing the available archaeological evidence and


◆ Recent Excavations
▨ Marshes
Campus Martius
Quirinal
Palus Caprae
Viminal
Cispius
Esquiline
Giardino Romano Excavation
Capitol
Subura
Fagutal
Regia Excavated by Brown
Sant'Omobono Sanctuary
Vesta Sanctuary
Oppius
Ianiculum
North Slope of the Palatine
Victory Sanctuary
Meta Sudans
Palatine
Palus
Caelian
Aventine
Palus
N
W
E
S
0
400
800 metres

13. Recent excavations in the historical and archaeological centre of Rome.

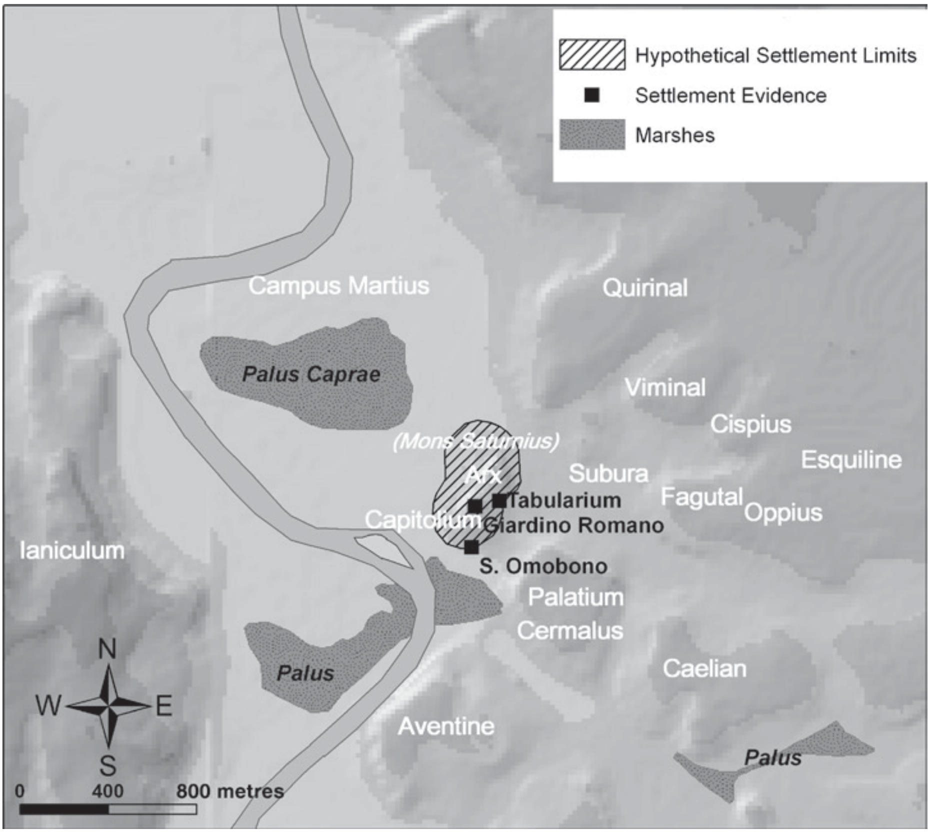
reconstructing the hypothetical extent of Rome during the various chronological phases. With the Early Iron Age, settlement evidence becomes more abundant, and a topographical reconstruction of all scattered finds and monuments excavated within the settlement area would require a research project of its own.[5]

The main indicator of the limits of the settlement in different phases has been the location of the funerary areas in relation to the morphological units where settlement evidence was attested. As already mentioned, it has been noted that from the Final Bronze Age onwards and more clearly during the Early Iron Age, formal burial areas in Latium vetus are generally separated from the inhabited area and located around the settlement to form a sort of annular transition zone between the urban and rural areas.[6] Therefore, they can be an important factor in defining the inhabited area.

Pre-Urban Rome (Bronze Age)

Middle Bronze Age (Seventeenth to Fourteenth Century BC)

Sporadic pre-historic finds dating back to the Early Bronze Age, or even earlier, are known from the central area of Rome.[7] In addition, Alessandro Guidi has


Hypothetical Settlement Limits
Settlement Evidence
Marshes
Campus Martius
Quirinal
Palus Caprae
Viminal
Cispius
(Mons Saturnius)
Esquiline
Arx
Subura
Tabularium
Fagutal
Oppius
Capitolium
Giardino Romano
Ianiculum
S. Omobono
Palatium
Cermalus
N
W
E
S
Palus
Caelian
Aventine
Palus
0
400
800 metres

14. Rome: archaeological evidence from the Middle Bronze Age (1700–1325/1300 BC).

identified some Early Bronze Age material among the finds from the area of S. Omobono and has attributed them to a possible lowland site such as a ford in the river Tiber.[8] However, it is generally believed that a stable settlement began on the site only in the Middle Bronze Age, as is the case for many other Latin settlements (Lavinium, acropoli; Fidenae, Villa Spada; Ficulea, acropoli; Crustumerium, acropoli; possibly Gabii; etc.). Middle Bronze Age pottery has been found in secondary deposits in two locations on the Capitoline Hill: in the area of the Tabularium[9] and in the area of the Giardino Romano.[10]

Middle Bronze Age pottery has also been found in a secondary deposit in the S. Omobono sanctuary excavation.[11] Traditionally these fragments were believed to have been originally deposited on top of the Capitoline Hill and only secondarily collapsed downhill by post-depositional processes, but more recently they have been attributed to a lowland site such as the ford in the river already attested to in the earlier phase[12] (Fig. 14). It should be noted that a sporadic Middle Bronze Age pottery fragment has also been found at the north-eastern slope of the Palatine,[13] but the existence of a settlement on this hill at this time is still largely debated.[14]

Because of the scarcity of archaeological evidence from the Tabularium, Alberto Cazzella believes that at this time the settlement of Rome was limited to the Capitolium (the southern part of the Capitoline Hill) and did not include the Arx (the northern part). According to this scholar the extent of the settlement would have not been much more than 1 ha, with a community of about 200 people.[15] However, the scarcity of material for such ancient phases has to be judged cautiously because of the concentrated human activity in the centre of Rome through many centuries and its extensive urbanisation.[16] Therefore, it is possible to tentatively suggest that by the Middle Bronze Age Rome extended over the entire Capitoline Hill, including the Capitolium and the Arx (Fig. 14). Such a settlement would have had an area of ca. 14 ha, while a settlement restricted to the Capitolium would have measured no more than 7–8 ha. The hypothesis of a Middle Bronze Age settlement on the entire Capitoline Hill had already been suggested by Andrea Carandini on the basis of the available archaeological evidence.[17]

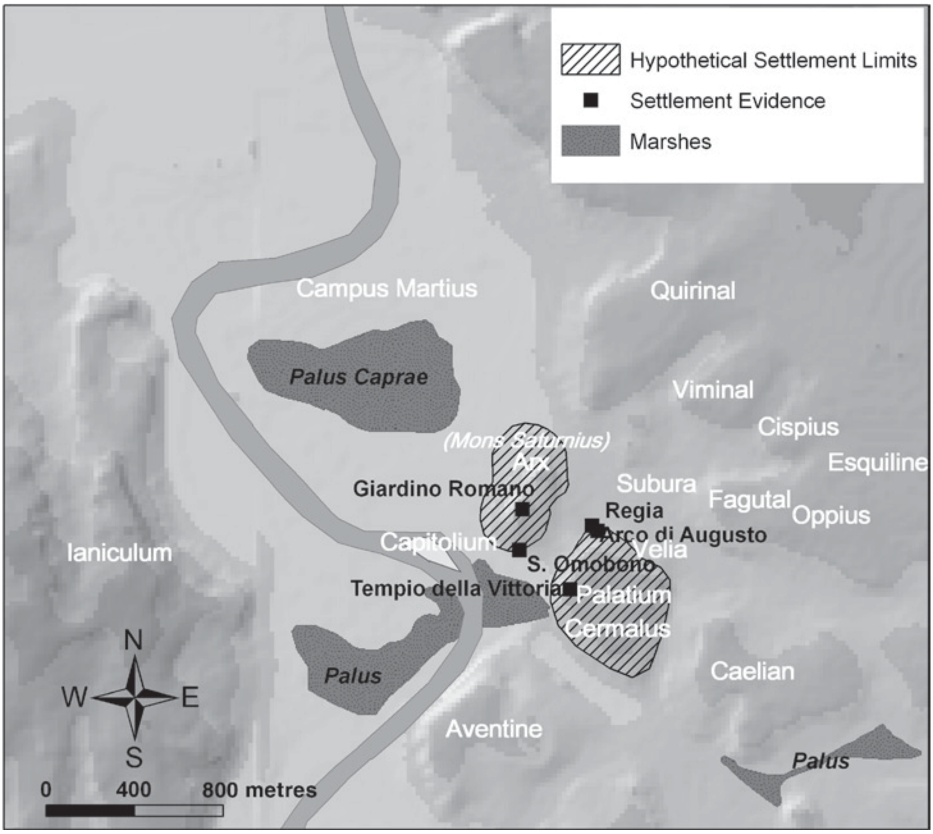
Recent Bronze Age (Thirteenth Century BC)

The excavation of the Giardino Romano has provided new and important information on the type of occupation and activities present on the Capitoline Hill during the Recent Bronze Age. In particular, the excavation has revealed a reorganisation of the north slope of the Capitolium with the creation of an earth terrace/fortification built with a dual purpose: to defend this side of the hill and to enlarge the inhabited area.[18]

The mobilisation and coordination of labour for this work possibly imply the existence of a ruling class that was able to organise and impose on a great portion of the community a prolonged period of corvée labour, which would have drawn workers away from subsistence labour in the fields. According to Cazzella, this massive work testifies to a particularly advanced stage of social organisation of the Roman community at this time and possibly a particular interest in the river Tiber and its ford.[19]

Recent Bronze Age pottery has also been found on the Palatine, in the Regia excavated by Frank Edward Brown, in the area of the Victory Temple, along the Via Sacra and in the vicinity of the Augustan Arch. The evidence from the Via Sacra consists of a bronze *fibula* (brooch or safety pin) and is probably from a funerary context; evidence from the other locations is of a domestic type and has been found in secondary deposits, except for the pottery found near the Augustan Arch in a primary deposit.[20] Recently, Recent Bronze Age material has also been found in an oval pit, one of a group of pits whose function is not yet clear, which was excavated directly in the natural soil in the area between the House of the Vestals and Brown's Regia[21] (Fig. 15).

According to Cazzella this evidence is not sufficient to indicate a settlement on the Palatine Hill and the finds just mentioned have to be interpreted as residues


Hypothetical Settlement Limits
Settlement Evidence
Marshes
Campus Martius
Quirinal
Palus Caprae
Viminal
Cispius
(Mons Saturnius)
Arx
Esquiline
Giardino Romano
Subura
Fagutal
Regia
Oppius
Arco di Augusto
Capitolium
Velia
Ianiculum
S. Omobono
Tempio della Vittoria
Palatium
Cermalus
N
W
E
S
Palus
Caelian
Aventine
Palus
0
400
800 metres

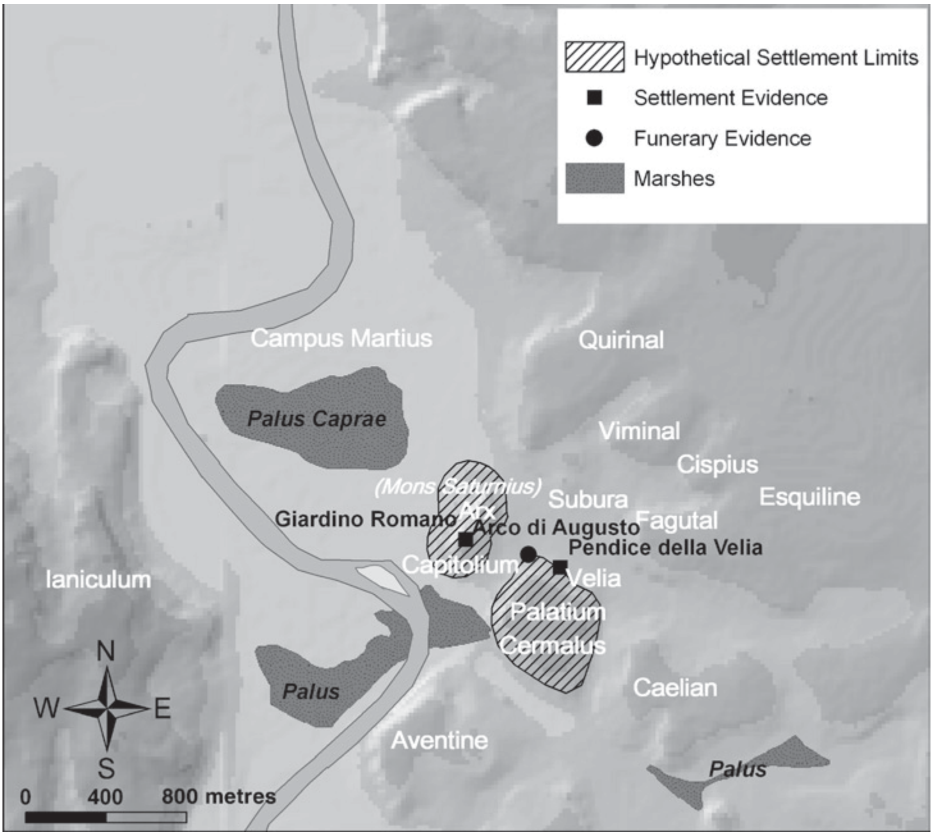
15. Rome: archaeological evidence from the Recent Bronze Age (1325/1300–1175/1150 BC).

of temporary activity. As in the Middle Bronze Age, according to Cazzella, the settlement of Rome during the Recent Bronze Age would have been limited to the Capitolium.[22] As already suggested for the Middle Bronze Age, Cazzella's position seems to be too rigid, and even scarce archaeological evidence has to be considered significant because of the continuous occupation of the city, which certainly has obliterated much evidence, especially for the older phases.

In conclusion, the archaeological evidence available for Rome during the Recent Bronze Age seems to be concentrated in two main areas: the Capitoline and Palatine Hills (Fig. 15). This interpretation of the archaeological evidence is similar to that advanced earlier by Andrea Carandini, who also suggested a possible occupation of the Aventine Hill on the basis of literary accounts.[23] According to the calculations presented earlier, the extent of the Capitoline Hill site would be approximately 14 ha, while the area of the Palatine Hill would measure approximately 23 ha.[24]

Final Bronze Age (Twelfth to Tenth Century BC)

A continuous occupation of the Capitoline Hill has been largely confirmed by the excavation of the Giardino Romano. A remodelling of the slope dated


Hypothetical Settlement Limits
Settlement Evidence
Funerary Evidence
Marshes
Campus Martius
Quirinal
Palus Caprae
Viminal
Cispius
(Mons Saturnius)
Subura
Esquiline
Arx
Giardino Romano
Arco di Augusto
Fagutal
Pendice della Velia
Capitolium
Velia
Ianiculum
Palatium
Cermalus
N
W
E
S
Palus
Caelian
Aventine
Palus
0
400
800 metres

16. Rome: archaeological evidence from the Final Bronze Age (1175/1150–950/925 BC).

to the early Final Bronze Age has been investigated by excavators, and domestic activity has been attested by the discovery of two fire hearths dated to the late Final Bronze Age.[25] Archaeological evidence of a stable occupation of the Palatine Hill is again quite scarce.

In the area around the Augustan Arch, in a layer dated to an early stage of the Final Bronze Age, a few cremation burials that have been attributed to a later stage of the Final Bronze Age (Latial Period I) have been excavated.[26] In addition, another pottery fragment, dated to Latial Period I, was recovered from the lower slope of the Velia towards the Coliseum valley[27] (Fig. 16).

Cazzella rejects the idea that the evidence from the Palatine can be seen as proof of continuous occupation of this hill during the Final Bronze Age. However, he admits that at this stage the Capitoline Hill settlement would have encompassed the Capitolium in order to include the Arx too.[28] In contrast with Cazzella's interpretation, in the present work even scarce material is considered significant, especially when it is early evidence recovered in such an intensely urbanised city. Therefore, it does not seem unreasonable to assume a substantial continuity in the settlement of Rome from the Recent to the Final

Bronze Age, with two main sites of, respectively, 14 ha (Capitoline Hill) and 23 ha (Palatine Hill) (Fig. 16). This interpretation of the archaeological evidence is similar to that advanced by Carandini, who also suggested an occupation of the Quirinal (Collis Latiaris) on the basis of his critical reading of literary accounts combined with archaeological evidence.[29]

Proto-Urban Rome (Early Iron Age)

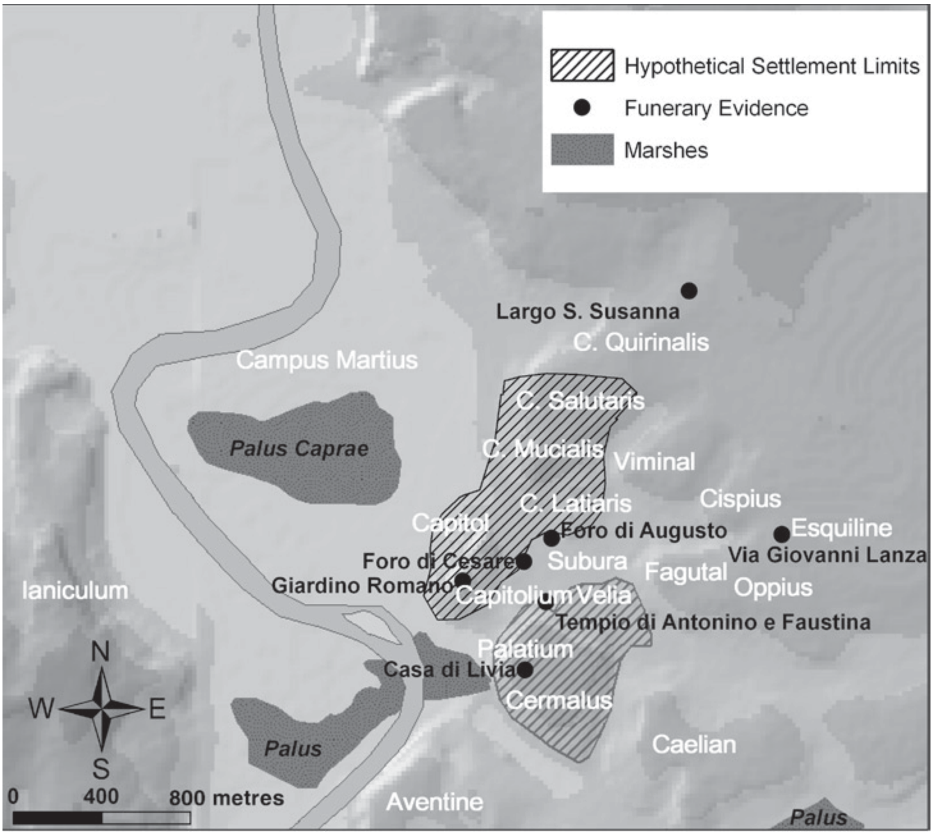
Beginning of the Early Iron Age 1, or Latial Phase IIA (Second Half of the Tenth and Beginning of the Ninth Century BC)

With the beginning of the Early Iron Age, the archaeological evidence from Rome becomes more abundant, especially from funerary contexts.[30] Domestic pottery is scarce for this period and has been found only on the Palatine Hill, in the area of the Victory Temple, and in the area of S. Sebastiano.[31] Recently, domestic activity, indicated by an open hearth with meal residues, dating to Latial Phase IIA, has been found in the area between the House of the Vestals and the Regia excavated by Brown.[32]

Regarding funerary evidence, the largest burial area of Latial Phase IIA known in Rome is the necropolis excavated near the Temple of Antoninus and Faustina, which included both cremation and inhumation burials.[33] Other funerary groups of Latial Phase IIA were probably in the areas of the Augustan Forum and Caesar's Forum[34] (Fig. 17). The Caesar's Forum tombs are particularly worth consideration. Among them were two male burials, whose grave goods included double shields and a knife. These objects, according to Anna De Santis, might indicate that the deceased had a religious role and possibly a high status.[35]

Sporadic finds from Latial Phase IIA burials are also known from the area of the Ministero dell'Agricoltura (Ministry of Agriculture, Largo S. Susanna) and could indicate the initial use of the necropolis on the Quirinal.[36] The use of the Esquiline necropolis could also have commenced in this period, since tomb 92 from Via Giovanni Lanza has been dated to Latial Sub-Phase IIA2 by Marco Bettelli in his study on the Early Iron Age funerary evidence from Rome[37] (Fig. 17).

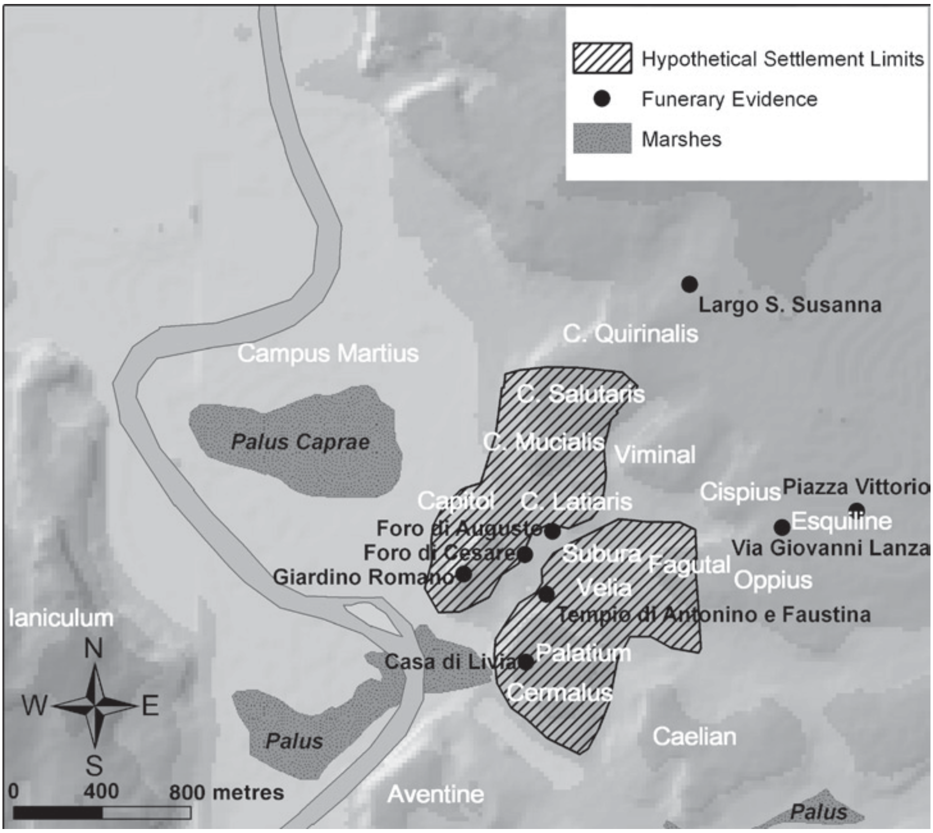
Finally, a funerary area from Latial Phase IIA has been excavated on the Capitolium. During the excavation of the Giardino Romano, in fact, some inhumations of children, deposited both in simple trenches or in pottery jars, so-called *enchytrismós* depositions, and young adult trench inhumation burials were unearthed (Fig. 17). Unfortunately, the context of these burials, possibly associated with metallurgical activity and enclosed within what is supposed to be a settlement area, is not entirely clear and their interpretation remains uncertain.[38]


Hypothetical Settlement Limits
Funerary Evidence
Marshes
Largo S. Susanna
C. Quirinalis
Campus Martius
C. Salutaris
Palus Caprae
C. Mucialis
Viminal
Cispius
C. Latiaris
Capitol
Foro di Augusto
Esquiline
Via Giovanni Lanza
Foro di Cesare
Subura
Fagutal
Ianiculum
Giardino Romano
Capitolium
Velia
Oppius
Tempio di Antonino e Faustina
Palatium
N
Casa di Livia
W
E
Cermalus
S
Palus
Caelian
0
400
800 metres
Aventine
Palus

17. Rome: funerary evidence from the Early Iron Age 1 Early (Latial Phase IIA, 950/925–900/875 BC).

According to Alberto Cazzella, during this time the main part of the settlement of Rome became the Palatine Hill, though in his opinion Rome remained quite a small village with an area of less than 20 ha.[39] However, from the funerary evidence available for Rome during Latial Phase IIA, presented earlier, it seems probable that while the main focus of the settlements remained the Capitoline Hill (funerary areas of the Augustan Forum and Caesar's Forum and intra-mural [?] burials of the Giardino Romano) and the Palatine Hill (cemetery of Temple of Antoninus and Faustina and intra-mural burial of Casa di Livia), these two areas of settlement occupation probably start to expand towards the Quirinal Hill (funerary area of Largo S. Susanna)[40] and the Esquiline Hill (funerary area of Via Giovanni Lanza).[41]

This will be even clearer in subsequent Latial Phase IIB (first half of the ninth century BC), when the evidence for the funerary area of the Esquiline becomes more abundant (Via Giovanni Lanza and Piazza Vittorio)[42] (Fig. 18). In any case, it remains rather problematic to establish the extent of these two main concentrations of settlement areas to the north-east, because there is no


Hypothetical Settlement Limits
Funerary Evidence
Marshes
Largo S. Susanna
C. Quirinalis
Campus Martius
C. Salutaris
Palus Caprae
C. Mucialis
Viminal
Capitol
C. Latiaris
Cispius
Piazza Vittorio
Esquiline
Foro di Augusto
Foro di Cesare
Giardino Romano
Subura
Fagutal
Via Giovanni Lanza
Oppius
Velia
Tempio di Antonino e Faustina
Ianiculum
N
W
E
S
Casa di Livia
Palatium
Cermalus
Caelian
Palus
0
400
800 metres
Aventine
Palus

18. Rome: funerary evidence from the Early Iron Age 1 Early (Latial Phases IIA/IIB, respectively 950/925–900/875 and 900/875–850/825 BC).

evidence for the occupation of the Quirinal and the Fagutal/Esquiline Hills apart from the scarce funerary evidence mentioned earlier, which could indicate the origins at this time for the funerary areas of both the Quirinal (Largo S. Susanna)[43] and the Esquiline (Via Giovanni Lanza).[44]

The settlement concentrated around the Capitoline Hill/Quirinal Hill could be estimated to be about 54 ha (including the Capitoline Hill and excluding the Collis Quirinalis, which is the extreme north-eastern part of the Quirinal Hill), while the settlement area around the Palatine Hill could be calculated to be between about 37 ha (when only the Palatine Hill, including the Cermalus and the Velia, is considered) and 60 ha (if the limit of the settlement is marked by the funerary area of the Esquiline).[45]

As for the 'political' organisation of the settlement of Rome at this time, it is difficult to say if the two major settlement areas, one on the Capitoline Hill and the other on the Palatine Hill, corresponded to two different communities. According to Andrea Carandini, for example, it is possible that two different communities gravitated respectively to the system Capitoline/Quirinal Hills (Colles) and to the system Palatine/Fagutal/Esquiline Hills (Montes). This would be indicated both by the archaeological evidence (such as the duplicate system of funerary areas: the Augustan Forum, Caesar's Forum and Largo S. Susanna on one side, and the Temple of Antoninus and Faustina, Via Giovanni Lanza and Piazza Vittorio[46] on the other side)[47] and by the presence of parallel sets of patron deities and cult systems, respectively, on the Capitoline/Quirinal Hills and the Palatine/Esquiline Hills.[48] However, according to Anna Maria Bietti Sestieri, the presence of two such substantial communities so near one another (within a distance of only a few hundred metres) is quite unlikely, and any sort of stable equilibrium would be impossible even for a short period of time.[49]

A crucial element of Carandini's interpretation of the development of proto-urban Rome is represented by his critical and historical analysis of the Septimontium (Seven Hills) Festival mentioned by ancient authors.[50] These sources and Carandini's interpretation will be briefly discussed later. According to Varro (116–27 BC), 'Septimontium' was the old name of the city of Rome that was later included within the Servian Wall: 'Ubi nunc est Roma <erat olim> Septimontium, nominatum ab tot montibus quos postea urbs muris comprehendit'[51] ('Where now there is Rome, there was once the "seven hills"; this is named after all the hills, later included within the urban walls').

The same source reports that Septimontium was also the name of a ritual festival which was celebrated not by the whole community of Rome, but only by the people from the Montes: 'Dies Septimontium nominatus ab his septem montibus in quis sita urbs est, feriae non populi sed montanorum modo ut Paganalia qui sunt alicuius pagi'[52] ('The day of the "Seven Hills" is named for the seven hills, on which the city lies; it is not a festival of all the community [*populus*] but of the people from the mountains [*montes*], just as the Rural Festival is the festival of the rural districts [*pagi*]').

According to Festus (second century AD), the Septimontium was a ritual celebration held in December, during which sacrifices were made on the seven hills, in particular on the Palatine, the Velia, the Fagutal, the Subura, the Cermalus, the Caelian, the Oppius and the Cispius: '<Septimontium … ap<pellatur mense <*Decembri … post eum, qui dicitur in*> Fastis Agonalia, <*quod eo die in septem* m>ontibus fiunt sa<crificia: Palatio, Velia, F>agutali, Subura, <Cermalo, Caelio, Oppio> et Cispio'[53] ('As is said in the Fasti, the Septimontium day in December is so called because on that day Agonalia sacrifices are made on the seven hills: Palatine Hill, the Velia, the Fagutal, the Subura, the Cermalus, the Caelian Hill, the Oppian Hill and Cispius').

As stated in another passage by the same author: 'Septimontium appellabant diem festum, quod in septem locis faciebant sacrificium: Palatio, Velia, Fagutali[a], Subura, Cermalo, Caelio, Oppio e Cispio'[54] ('It was called Septimontium, a festival day in which sacrifices were made in seven places: Palatine Hill, Velia, Fagutal, Subura, Cermalus, Caelian Hill, Oppian Hill and

Cispius'); and again: 'Septimontio ut ait Antistius Labeo hisce montibus feriae: Palatio cui sacrificium quod fit Palatuar dicitur; Veliae (villae, cod.) cui item sacrificium; Fagu<t>ali (faguali, cod.), Suburae, Cermalo, Oppio, Caelio monti, Cispio (cis itum, cod.) monti"[55] ('As Antistius Labeo [first century BC / first century AD] says, the festival of the Septimontium [is named after] these *montes*: the Palatine Hill, on which a sacrifice used to be made in honour of Palatuar; the Velia, where a sacrifice is also made; the Fagutal, the Subura, the Cermalus, the Oppian Hill, the Caelian Hill, the Cispius').

In both of the passages by Festus, eight hills, or places, are mentioned rather than seven. Several scholars have noted this inconsistency and thus consider the tradition of the Septimontium to be unreliable; some have tried to eliminate one of the hills mentioned as a later and inauthentic intrusion.[56] As will be shown later, according to Carandini this inconsistency is only apparent and can be explained by the gradual evolution of the Septimontium. In fact, the Fagutal and the Oppius (added at two different stages) refer to the same hill (being the Fagutal part of the Oppius Hill), and both toponyms might have been retained simply for religious reasons. Although this explanation is reasonable, another observation is worth mentioning: the apparent inconsistency between eight places and seven topographical hills might indicate that the tradition of the Septimontium is genuine; if it was a later invention, probably any inconsistency would have been avoided.

Because of these accounts by ancient authors, Carandini, in contrast to many historians, believes that the Septimontium was not only a religious festival but also a topographical reality that received political legitimisation through religion, which was not unusual in ancient civilisations.[57] In particular, this scholar suggests that the origin of Rome is characterised by the parallel development of two settlements: the Colles, which developed around the Capitoline/Quirinal Hill, and the Montes, which was centred on the Palatium/Velia system.[58] While literary accounts provide very little information about the topographical organisation of the Colles, a 'stratigraphic' and 'topographical' analysis of the place names included in the Septimontium list, combined with available archaeological evidence, enabled Carandini to propose a detailed chronological evolution of the Montes.[59]

In the list of hills included in the Septimontium, according to Carandini, two coherent topographical groups can be distinguished: the first five hills, including the Palatium, Velia, Fagutal, Subura and Cermalus, form a group centred around the Palatine Hill, while the Oppius, the Caelian Hill and Cispius form a more peripheral cluster.[60] Within the first group, Carandini identifies a smaller core, constituted by the Palatium and the Velia, which in his opinion can be considered older than the others. Antistius Labeo reported (as quoted earlier) that these were the only two hills where sacrificial acts took place. The Cermalus, according to Carandini, should be added to this group for topographical consistency (it is physically united with the Palatium to form the Palatine Hill) and for the antiquity and prestige of cults related to this hill.[61]

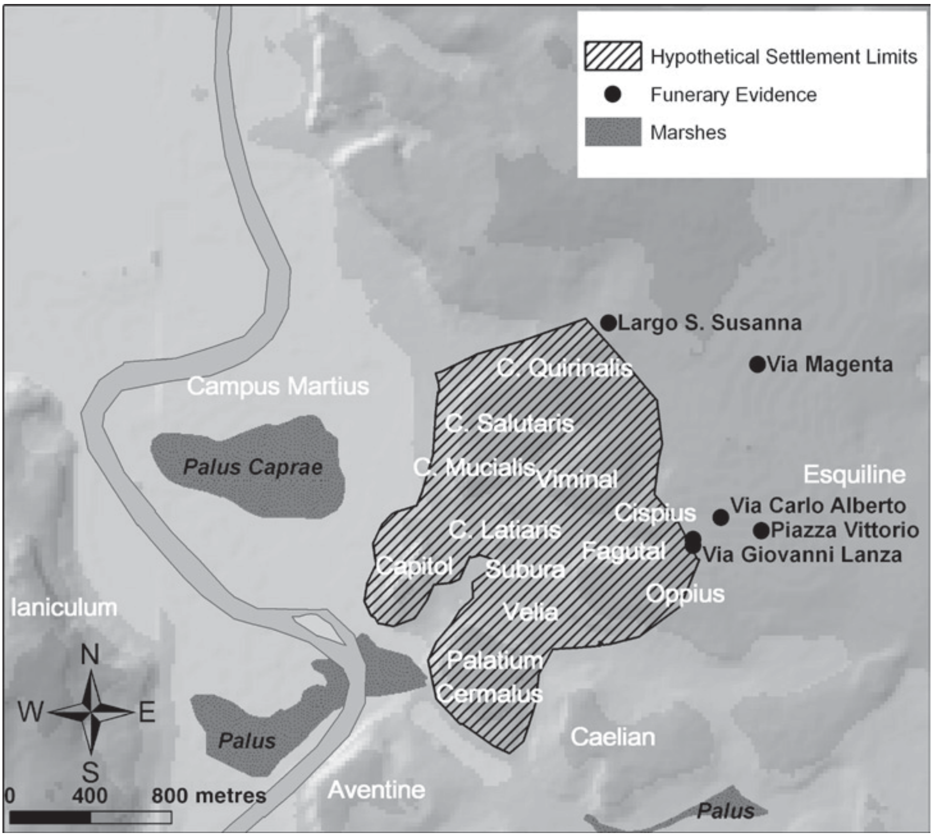
To summarise, according to Carandini, during Latial Phase IIA (second half of the tenth century BC), while the settlement of the Colles (Collis Latiaris, Mucialis, Salutaris and Quirinalis) remains the same, the settlement of the Montes evolves: Carandini dates the Trimontium (Three Hills), including the Palatium, Cermalus and Velia,[62] to Latial Phase IIA (second half of the tenth century BC), while he dates the subsequent Quinquimontium (Five Hills), including the previously mentioned hills with the addition of the Fagutal and the Subura, to the end of Latial Phase IIA and the beginning of Latial Phase IIB[63] (end of the tenth and beginning of the ninth century BC). As will be shown in the following section, the Septimontium (first Septimontium according to Carandini) will be completed with the addition of the Oppius, Cispius and Caelian Hill during Latial Phase IIB, or ninth century BC.[64] While it seems reasonable, as suggested by Carandini, to identify a certain topographical consistency and possibly a topographical evolution in the tradition related to the religious feast of the Septimontium, it is equally difficult to precisely define these different stages and relate them to the archaeological evidence of very early Rome.

As illustrated at the beginning of this section, the archaeological evidence seems to suggest a gradual expansion of the inhabited area (limited to the Capitoline and Palatine Hills in the previous phase), with the limited establishment of funerary areas on the Quirinal and Esquiline Hills, respectively. Indeed, these archaeological elements might mirror the evolution of the Colles and the Montes (from Trimontium to Quinquimontium to Septimontium). However, these issues are still highly debated and scholars cannot agree on a definitive interpretation.

As will be illustrated in the following section, there seems to be more agreement among scholars on the dramatic enlargement of the settlement of Rome during the subsequent phase (Latial Phase IIB / beginning of Latial Phase IIIA, ninth century / beginning of the eighth century BC), with the definitive cessation of use of the more internal funerary areas of the Forums of Augustus and Caesar and of the Temple of Antoninus and Faustina and the clear increase in the use of the funerary areas of the Quirinal and Esquiline Hills.

Advanced Phase of Early Iron Age 1 and Beginning of Early Iron Age 2, or Latial Phase IIB and Latial Phase IIIA (Ninth Century and Beginning of the Eighth Century BC)

With respect to settlement evidence, pottery from Latial Phases IIB and IIIA has been found in secondary deposits in several contexts on the Palatine Hill (Magna Mater Temple, under the Atrium and Aula Regia of the Domus


Hypothetical Settlement Limits
Funerary Evidence
Marshes
Largo S. Susanna
Via Magenta
C. Quirinalis
Campus Martius
C. Salutaris
Palus Caprae
C. Mucialis
Viminal
Esquiline
Via Carlo Alberto
Cispius
C. Latiaris
Piazza Vittorio
Fagutal
Via Giovanni Lanza
Capitol
Subura
Oppius
Ianiculum
Velia
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Palatium
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Caelian
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400
800 metres
Aventine
Palus

19. Rome: funerary evidence from the advanced Early Iron Age 1 Late (Latial Phase IIB, 900/875–850/825 BC, and IIIA, ca. 850/825–800 BC).

Augustana, near the Meta Sudans, in front of the Basilica of Maxentius and under the Regia), on the Capitoline Hill (Tabularium, area of the Promoteca and S. Omobono), on the Quirinal Hill (Piazza della Pilotta) and in the Forum valley (Comitium, Equus Domitiani, Augustan Arch, near the Antoninus and Faustina Temple). Some hut remains have also been found in the Cermalus (Scalae Caci), the north slope of the Palatine and the area of the Regia (excavated by Brown).[65]

By Latial Sub-Phase IIA2 (end of the tenth century) and Latial Phase IIB and IIIA (ninth century BC), the funerary areas in the central area of Rome were no longer in use (Augustan Forum, Caesar's Forum) or were reserved for infants, children and juvenile adults (Antoninus and Faustina Temple, from Latial Phase IIIB, second quarter of the eighth century onwards),[66] while formal adult burials were moved to other, more distant reserved areas: on the Quirinal (Largo S. Susanna),[67] the Esquiline (Via Giovanni Lanza, Via Carlo Alberto, Piazza Vittorio)[68] and Viminal (Via Magenta)[69] (Fig. 19). On the basis of this evidence most scholars agree on the exceptional growth of Rome by this period,[70] which makes this site comparable in size to that of other Etruscan proto-urban centres.[71]

Notwithstanding this general agreement, there are still differences in the estimation of the extent of Rome during this period. Alberto Cazzella calculates an extent of about 100 ha.[72] Paolo Carafa suggests that by this time all the areas of Rome, later included within the Servian Wall, were sparsely settled, with the exception of the funerary area in the northern part of the Quirinal, and he calculates the extent of this settlement to be about 150 ha.[73] Carmine Ampolo's estimate is between 80 and 170 ha.[74]

On the basis of the scarce settlement evidence and more importantly the location of funerary areas,[75] it seems reasonable to suppose, for this time, a general though not uniformly dense[76] occupation of the Capitoline Hill, the Quirinal and Viminal Hills, the Palatine Hill, with the Velia, Cispius, Fagutal and Oppius, which totals an extent of about 202 ha.[77] A similar estimation of the extent of Rome, pre-figuring the city of the four Servian regions without the Caelian Hill, had already been suggested for the first half of the eighth century BC by Giovanni Colonna in the early 1970s.[78]

Although the settlement evidence for Rome is scattered and a full survey of the urban area is obviously impossible for historical reasons, the 'unity' of the settlement in this phase, or at least a very strong link between the communities in the area of the Roman hills, is assumed on the basis of the location of funerary areas all around the supposed inhabited area and because, as suggested by Alessandro Guidi, the sites identified as settlement areas (even though sometimes in secondary deposits) are too close to one another (generally less than 500 m) to be considered separate villages.[79]

As mentioned in the preceding section, on the basis of a critical interpretation of literary accounts and archaeological evidence, Carandini hypothesises the presence on the site of Rome of two main communities (the Colles, centred on the Capitoline Hill, with the Quirinal and Viminal Hills, and the Montes, in particular the first Septimontium, centred on the Palatine Hill, with the Cermalus, Velia, Subura, Fagutal, Oppius, Cispius and possibly the Caelian Hill). Those two communities would merge into one large settlement (the second Septimontium) by the end of Latial Phase IIB or the beginning of Latial Period III[80] (mid to late ninth century BC). While most scholars agree that the settlement of Rome had expanded by this time, as already mentioned, Anna Maria Bietti Sestieri has expressed reservations about this interpretation. It is reasonable to agree with Bietti Sestieri that the parallel and simultaneous development of two quite extensive proto-urban centres so near one another and almost on the same site would have been difficult even for a limited period of time,[81] unless there were some sort of close relation and/or collaboration between the two communities.

Urban Rome (End of the Early Iron Age, Orientalizing Age and Archaic Age)

First Regal Period (End of the Early Iron Age 2 and Orientalizing Age, or Latial Phases IIIB, IVA and Beginning of Latial Phase IVB, First Half of the Eighth to the End of the Seventh Century BC)

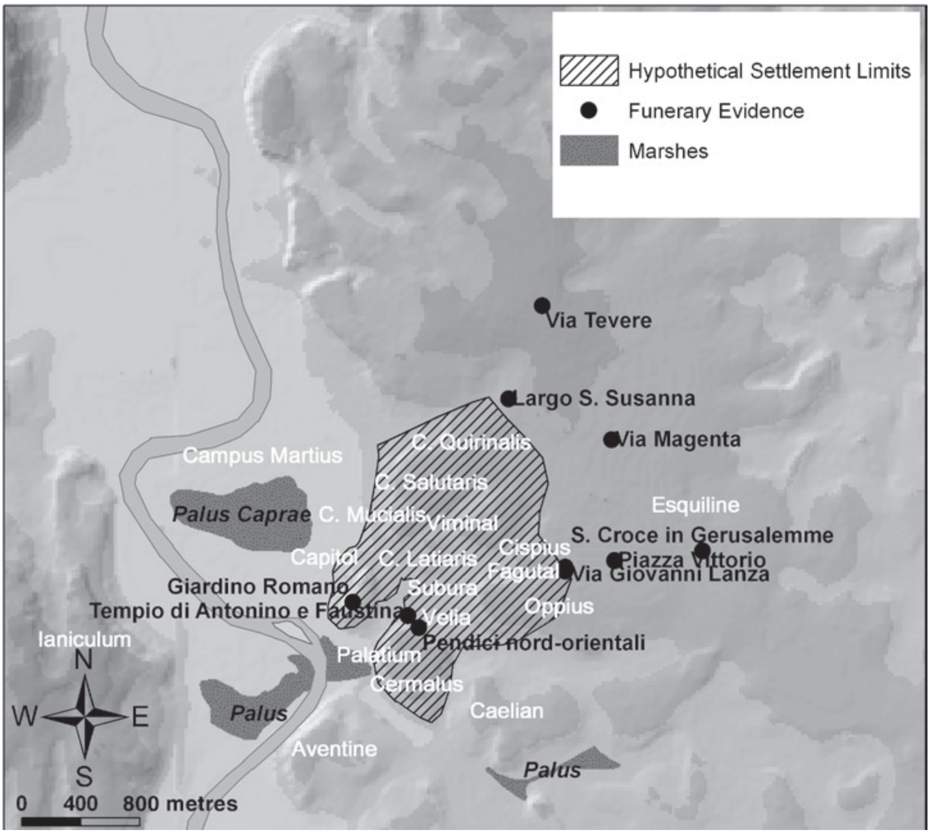
From Latial Phase IIIB (first half of the eighth century BC) onwards, archaeological evidence on the settlement of Rome is more abundant. Knowledge of the city centre, especially the very heart of Rome, free of modern urbanisation, has increased enormously thanks to recent research and excavations.

In this section, funerary evidence will be considered in order to define the extent and dimensions of the settlement. Then the principal archaeological contexts within the settlement will be briefly summarised, with particular focus on the most recent excavations and research. Regarding the extra-mural funerary areas, the necropoleis of the Quirinal, Viminal and Esquiline continued to be used during Latial Phase IIIB and Sub-Phase IVA1 (eighth century BC) (Fig. 20).

During these phases there is still no evidence for the occupation of the Caelian Hill, but, as previously mentioned, this could be due to a lack of archaeological research. On the basis of sporadic funerary evidence from the Middle Orientalizing Age (670/660–640/630 BC) found in the area of the S. Giovanni in Laterano church on the Oppian Hill,[82] Giovanni Colonna suggests that the beginning of a new funerary area in this location could be related to the urban growth of the Caelian Hill under the king Tullus Hostilius (dated to ca. 672–640 BC according to the tradition based on literary accounts) rather than to a novel occupation of this hill.[83] Finally, funerary evidence from the Recent Orientalizing Age (640/630–580 BC) has also been found along the Via Latina[84] (Fig. 21).

Of the funerary areas within the settlement, both the Giardino Romano funerary area and the burials near the Temple of Antoninus and Faustina had a specific purpose in this period. They were burial areas for infant and juvenile individuals, according to a custom which was common in Latium vetus in the Early Iron Age and the Archaic Age.[85] However, the burials (two infants and three adults) found at the north-eastern slope of the Palatine Hill in connection with the destruction and obliteration of the earthen wall and dated to the middle to end of the eighth century BC are clearly different.[86] Their location (in the settlement area), their context (in a precinct with a strong connection with the destruction of the wall) and their characteristic features (graves of poor adults, which are uncommon in a settlement area) suggest that these burials could have had a ritual meaning related to the sacrilegious destruction of the sacred walls.[87]

As suggested by Andrea Carandini, after the creation of a large unified settlement by the end of Latial Phase IIB (middle to the end of the ninth century BC), the extent of the settlement of Rome did not change greatly until


▨ Hypothetical Settlement Limits
● Funerary Evidence
▨ Marshes
Via Tevere
Largo S. Susanna
Via Magenta
C. Quirinalis
Campus Martius
C. Salutaris
Esquiline
Palus Caprae
C. Mucialis
Viminal
S. Croce in Gerusalemme
Capitol
C. Latiaris
Cispius
Fagutal
Piazza Vittorio
Via Giovanni Lanza
Giardino Romano
Subura
Tempio di Antonino e Faustina
Velia
Oppius
Ianiculum
Pendici nord-orientali
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Palatium
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Palus
Cermalus
Caelian
Aventine
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Palus
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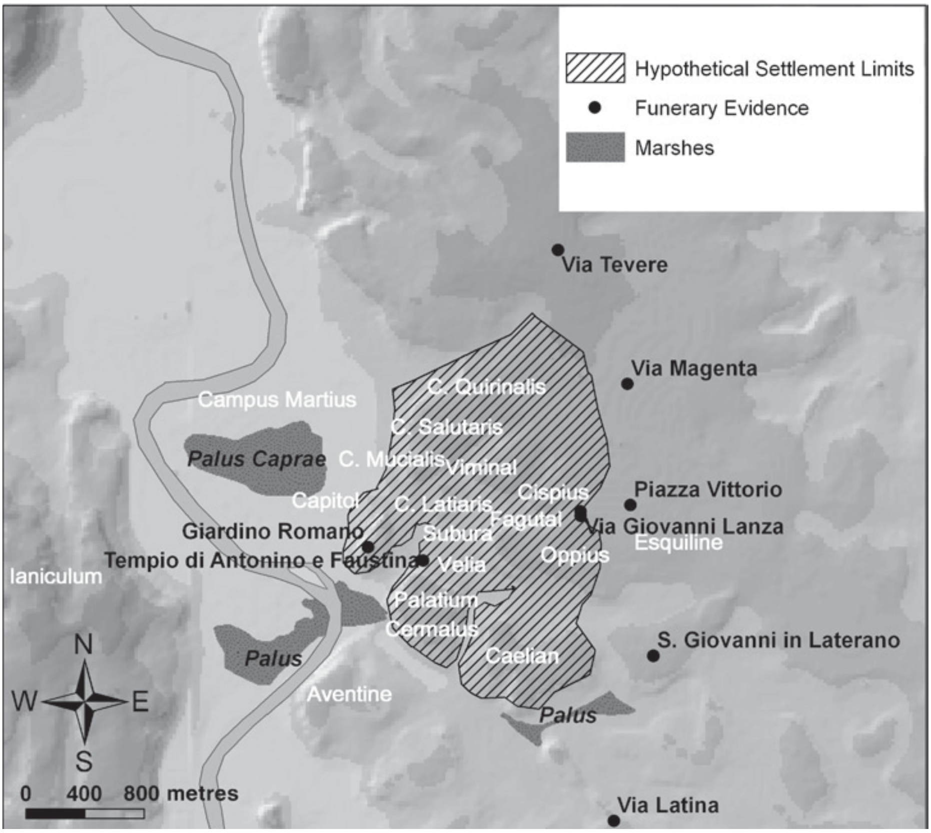
20. Rome: funerary evidence from the final Early Iron Age 2 and Early Orientalizing Age (Latial Phase IIIB, 800–750/725 BC, and Latial Sub-Phase IVA1, 750/725–670/660 BC).

the beginning of the Regal Period, that is, at the end of the Early Iron Age 2 and the beginning of the Orientalizing Age (around the middle of the eighth century BC)[88] (cf. Figs. 19 and 20). At this stage, on the basis of the location of funerary areas, the extent of Rome is about 275 ha when the Caelian Hill is included or 210 without it[89] (Fig. 20).

A larger settlement seems to be more likely from the Middle and the Recent Orientalizing Age (seventh century BC) onwards. At this time, in fact, the necropolis of the Quirinal seems to move farther away, and the occupation of the Caelian seems to be confirmed by the beginning of the use of funerary areas both along the Via Latina and in the area of S. Giovanni in Laterano[90] (Fig. 21). In this case the extent of Rome would be similar to what it was under the traditional figure of the king Servius Tullius (Fig. 29), dated according to the literary tradition to about 578–535 BC, but without the Aventine – that is, about 310–320 ha.

In the case of other contemporary Latin and Etruscan settlements (e.g., Gabii, Lavinium-Pratica di Mare and Veii), surveys have demonstrated that, during Latial Phases IIB and IIIA (ninth and beginning of the eighth century

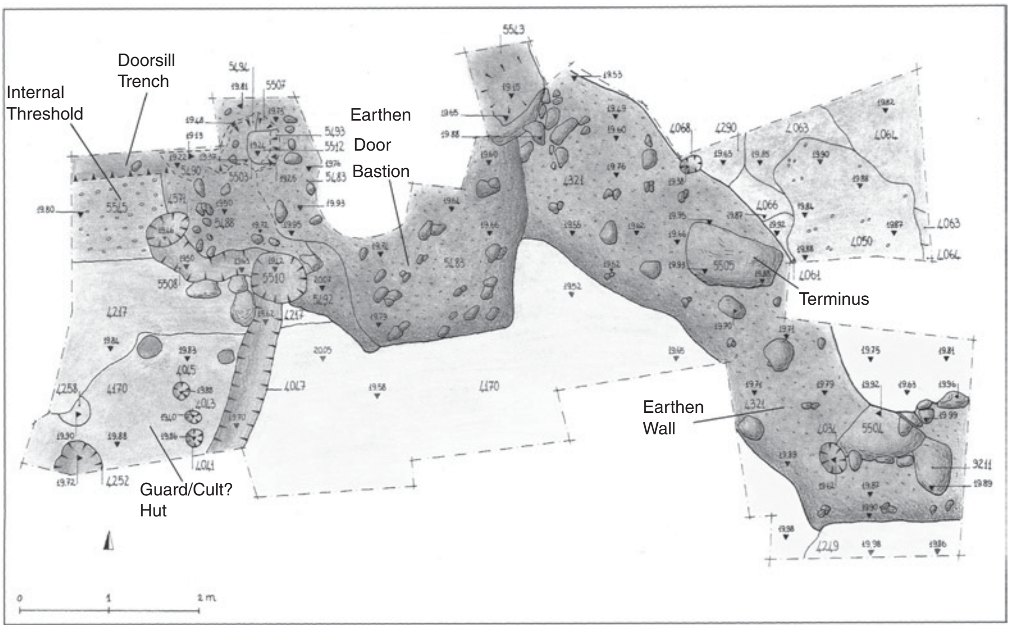

Hypothetical Settlement Limits
Funerary Evidence
Marshes
Via Tevere
Via Magenta
Campus Martius
C. Quirinalis
C. Salutaris
Palus Caprae
C. Mucialis
Viminal
Capitol
C. Latiaris
Cispius
Piazza Vittorio
Fagutal
Via Giovanni Lanza
Esquiline
Giardino Romano
Subura
Tempio di Antonino e Faustina
Velia
Oppius
Ianiculum
Palatium
Cermalus
S. Giovanni in Laterano
Palus
Caelian
Aventine
Palus
N
W
E
S
0 400 800 metres
Via Latina

21. Rome: funerary evidence from the Middle and Recent Orientalizing Ages (Latial Sub-Phase IVA2, 670/660–640/630 BC, and Latial Phase IVB, 640/630–580 BC).

BC), a growth in the density and unity of the settlements was most likely under way, as indicated by a clear concentration of domestic sites within the perimeter of the plateaux. It has been noticed that, by the middle to the end of the eighth century BC, in the case of both Lavinium (Pratica di Mare) and Gabii, sites outside the plateau limits and sites on the lower slopes were abandoned, while pottery concentrations on top of the plateau increased in number and density. It has been suggested that this contraction of the inhabited area probably meant an official recognition and a juridical definition of the limits of these settlements.[91]

New Archaeological Evidence in Rome from the First Regal Period (End of the Early Iron Age 2 and Orientalizing Age, or Latial Phases IIIB, IVA and Beginning of Latial Phase IVB, Eighth through the End of the Seventh Century BC) and Re-evaluation Studies

As mentioned earlier, recent excavations conducted in the archaeological and historical centre of the city have revealed new evidence about the beginning

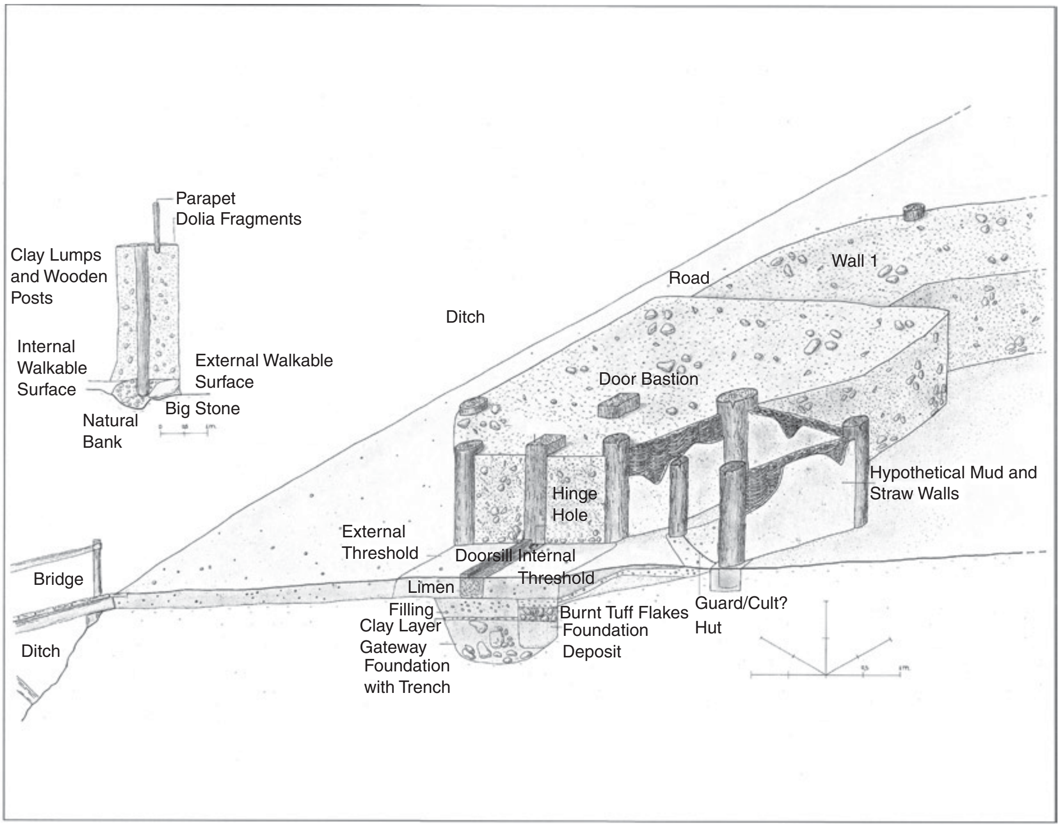


22. Rome, north-eastern slope of the Palatine Hill: earthen wall door gate (Porta Mugonia, ca. 750–725 BC), composite plan of the evidence. (From Carandini & Carafa 2000, vol. 34, table 21, p. 23, with kind permission of the authors.)

and early phases of Rome. This very stimulating but also controversial evidence will be briefly reviewed here.

Excavation on the northern slope of the Palatine Hill started in the early 1980s with the excavation of the house of M. Aemilius Scaurus (first century BC), in front of the Arch of Titus at the corner of the Via Sacra and the Clivus Palatinus, and continued during the 1990s along the Via Sacra to the west.[92] An early and prolonged human presence in the area[93] is suggested by Neolithic stone tools and pottery found in later deposits,[94] but the first stable occupation of the lower slope of the Palatine is attested by two wooden huts and one cooking chamber oven, dating back to the advanced Early Iron Age (Latial Phase IIB/IIIA, ninth and beginning of the eighth century BC).[95]

According to Carandini and his collaborators, this area was part of a larger stable settlement that was obliterated around the middle of the eighth century BC when huts were demolished to make way for a new monument: an earthen wall encircling the lower slope of the Palatine Hill.[96] The excavation at the north-eastern slope of the Palatine unearthed half of a door gate of this wall, which Carandini identified as the Porta Mugonia (Mugonia Gate).[97] A portion of the earthen wall (reinforced with stones and wooden posts), a bastion (with an associated guard hut or possibly cult hut) and half a threshold with a foundation deposit underneath have been excavated and documented (Figs. 22 and 23). Pottery and objects found in the deposits under the doorstep (a female infant's cenotaph burial) have

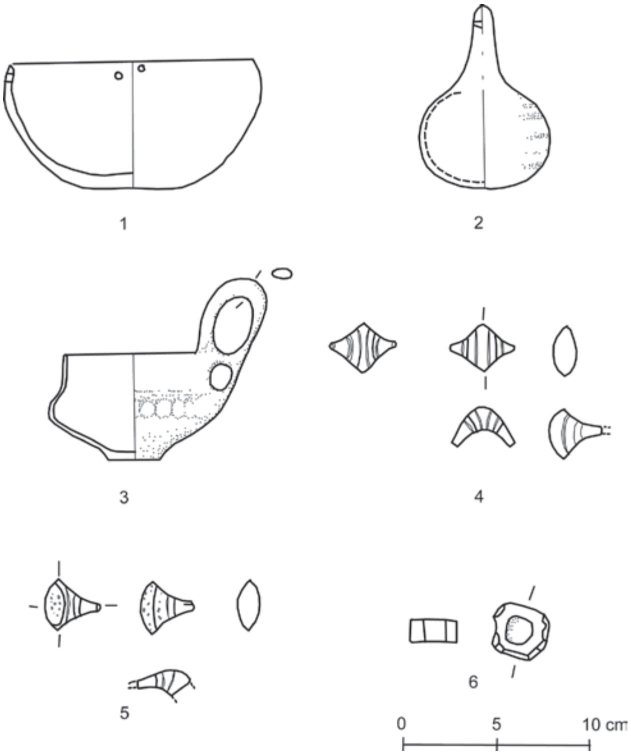

Parapet
Dolia Fragments
Clay Lumps and Wooden Posts
Internal Walkable Surface
External Walkable Surface
Big Stone
Natural Bank
Ditch
Road
Wall 1
Door Bastion
Hypothetical Mud and Straw Walls
Hinge Hole
External Threshold
Doorsill
Internal Threshold
Limen
Filling
Clay Layer
Gateway Foundation with Trench
Burnt Tuff Flakes Foundation Deposit
Guard/Cult? Hut
Bridge
Ditch

23. Rome, north-eastern slope of the Palatine Hill: earthen wall door gate (Porta Mugonia, ca. 750–725 BC), assonometric reconstruction. (From Carandini & Carafa 2000, vol. 34, table 26, p. 27, with kind permission of the authors.)

dated the wall to around the middle of the eighth century BC[98] (Fig. 24). It cannot be denied that this date is astonishingly close to the traditional date of the foundation of Rome, 753 BC according to ancient historians.

The wall was constituted by earthworks with earth and tuff stone foundations in a foundation trench. Vertical wooden posts with a 20- to 30-cm radius, probably connected by horizontal wooden timbers or ropes, were attested by postholes found in different locations along the foundation trench of the walls (one was also found in the bastion of the door). Large *dolium* fragments were found in the filling of the pit, where the destruction debris of the wall had been ritually deposited. Excavators have suggested that these *dolium* fragments were originally placed on top of the earthen fortifications to reduce rain erosion.[99]

These are the functional aspects of the wall, but there is also archaeological evidence of ritual activities connected with its construction. For instance, in the foundation trench large polygonal or semi-circular stones of red tuff were found. They apparently have no functional purpose and are situated mainly



24. Rome, north-eastern slope of the Palatine Hill: foundation deposit under the doorstep of the earthen wall door gate (Porta Mugonia, ca. 750–725 BC): (1) *depurata* (fine clay) hemispheric cup; (2) *depurata* rattle; (3) *impasto bruno* (Orientalizing dark brown, relatively coarse ware) cup; (4) and (5) bronze *fibulae* (brooches) with bone arch; (6) semi-worked disk cut from a cattle long bone. (Redrawn after Carandini & Carafa 2000, vol. 31–32–33, fig. 159, p. 195).

where the wall changes direction, at intervals of about 60 cm. Since these stones have no structural function, they have been interpreted by Carandini as liminal stones and have been associated with Terminus, the Latin divinity in charge of protecting boundaries, who was often represented by a large stone.[100]

In the second half of the seventh century BC, the wall was destroyed and part of the material resulting from its demolition was deposited in a pit, which cut the destruction layers of the wall. Similarly, in the destruction and levelling layers, a small rectangular pit was dug and an infant *enchytrismós* burial was deposited in it. This funerary ceremony suggested to the excavators that some ritual activity was connected to the destruction of the walls and that the big pit could be interpreted as a ritual deposit of the wall debris.[101] This evidence implies a sacred status for the fortifications around the Palatine, which was confirmed by the discovery of five inhumation tombs, again connected with its demolition. These burials, which are quite poor and in an unusual topographical position within the settlement area,[102] were interpreted by the excavators as ritual burials, or even human sacrifices offered to the gods in an act of expiation for the sacrilege of destroying the wall.[103]

A new wall was built on the destruction layers of the first wall. The technique used to construct the second wall was different: there was no foundation trench and pebbles mixed with other drainage materials were used as foundations. The fortification walls consisted of two tuff stone walls (with some stones roughly worked into a rectangular shape) filled by a core of earth mixed with tuff fragments. It is possible that the top of the wall was covered by tiles to prevent rain erosion and provide a walkable surface for soldiers. It was considered significant by the excavators that the second gate was in the same position as the older one. Associated pottery and the position in the stratigraphic sequence suggest a dating for this second wall to the seventh century BC, probably around 625–600 BC.[104]

On the destruction of the second wall, the area was levelled again and a third wall of rectangular tuff blocks (*opus quadratum*) was built. At the same time, a new ditch was excavated a bit farther toward the valley. No activity layers were connected with the wall in this phase. In the levelling layer, above the destruction layer of the second wall, pottery from the beginning of the sixth century was found, which indicates that the third wall was built soon thereafter, probably by the middle of the sixth century BC. Soon after, a new wall of the same type was added, which duplicated the third one.[105]

This final wall has been dated to slightly after the middle of the sixth century BC. As in the case of the first wall, the destruction debris of these two final walls was deposited in a large circular pit. After the wall destruction, all previous activities were covered and obliterated by levelling layers, with only one exception: the posthole of the wall door was maintained and restored (the area was also drained by small drainage trenches) until the final, definite levelling of the area, around 530 BC for the building of stone-walled aristocratic houses.[106]

Even after this dramatic change in the area from public to private use, the monument was not completely forgotten and some parts of it were rebuilt, up until the Republican Period. In fact, the late Archaic rebuilding of the Porta Mugonia shows traces of a very particular type of restoration. The restoration walls of the Late Republican Period, adapted to cover the monument of the Archaic Age, were constructed with a nucleus in Roman concrete (*opus caementicium*), but on the external face they were covered by thin grey granular tuff (*cappellaccio*) slabs in order to imitate an archaic construction technique.[107] Carandini has connected the earthen wall around the Palatine Hill with the traditional account in literary sources of the founding of Rome by Romulus, as well as with his founding of the city by the ritual definition and delimitation of the Palatine Hill according to an Etruscan ritual tradition.[108]

The sacred and political importance of the Palatine Hill seems to have been confirmed by Clementina Panella's excavations at the north-eastern corner of this hill, in the area of the Meta Sudans.[109] These excavations uncovered a crossroad possibly dating back to the end of the eighth and the beginning of the seventh century BC[110] and two related cult areas with continuing activity from the Orientalizing Age until the early Imperial Era.[111] One of these was tentatively identified with the Curiae Veteres (Old Curiate), the building where Roman citizens, divided into *curiae* by Romulus, discussed their affairs and celebrated sacred rituals.[112] If this identification is correct, this monument (an open-space precinct in tuff blocks later restored with bricks), according to tradition,[113] would constitute the limit of the earthen 'Romulean' wall on this side of the Palatine. In addition, to the north of this monument a portion of a wall made of tuff blocks, continuously in use from the sixth century BC to the age of Nero (37–68 AD), was excavated. This wall has been interpreted as part of the restoration of the 'Romulean' earthen wall around the Palatine completed in the Archaic Age in order to commemorate the monument after its demolition and the enlargement of the Pomerium to include all of the seven hills within the new tuff block fortification walls of the Servian Age (ca. 578–534 BC).[114]

In addition, more places connected with the memory of Romulus and associated with the Palatine Hill might have found substantiation in the archaeological evidence, according Paolo Brocato. This scholar identified the original Casa Romuli and the Roma Quadrata with a sequence of huts associated with pits excavated at the beginning of the nineteenth century on the Cermalus in the area in front of the Magna Mater and the Temple of Victory, near the highest point of the Scalae Caci, at the south-western corner of the Palatine Hill, and dating to the end of the ninth or the first half of the eighth century BC.[115] However, it should be noted that Brocato's interpretation, based on the difficult and uncertain analysis of old excavation reports, is highly controversial and has been questioned by other scholars.

For example, Patrizio Pensabene and his collaborators, who had already identified the Casa Romuli (or in any case an important shrine linked to the memory of Romulus) as the monument subsequently re-examined by Paolo Brocato,[116] expressed some doubts about Brocato's interpretation of the oldest phases of the monument.[117] In particular, Pensabene expressed concerns about Brocato's association of the Orientalizing huts and the Regal residency with the cult place of Ops and Martis. However, he did not completely rule out a connection of this part of the Palatine with places connected with the memory of Romulus and deities such as Mars and Ops, as demonstrated by the subsequent construction in this area of the Temple of Victory (294 BC), identified with Ops, Vica Pota (Goddess of Victory and Regal Power).[118]

In addition, Pensabene identified the Roma Quadrata of the Augustan Age in a small temple placed within the west court of the house of Augustus, just on the western side of the area in front of the Temple of Apollo,[119] exactly where Verrius Flaccus (ca. 55 BC–20 AD) located it: 'Quadrata Roma "locus" in Palatio ante templum Apollinis dicitur ubi reposita sunt quae solent boni ominis gratia in urbe condenda adhiberi, quia saxo munitus est in specimen quadratam'[120] ('What is called "square" Rome is on the Palatine in front of the Temple of Apollo. It is where these things are stored which are customarily used for the sake of a good omen in founding a city').[121] However, according to Andrea Carandini, the Roma Quadrata of the Augustan Age should be located at the central focal point of the hypothetical reconstruction of the Temple of Apollo (measuring ca. 70–72 m, or ca. 242 ft., long in its full extent), exactly on the same geometrical axis as the Romulean Casa Romuli identified by Brocato, at a distance again of about 70 m, that is, about 240 ft., therefore at the 'balancing point'[122] according to the description provided by another ancient author, Julius Solinus (middle of the fourth century AD).

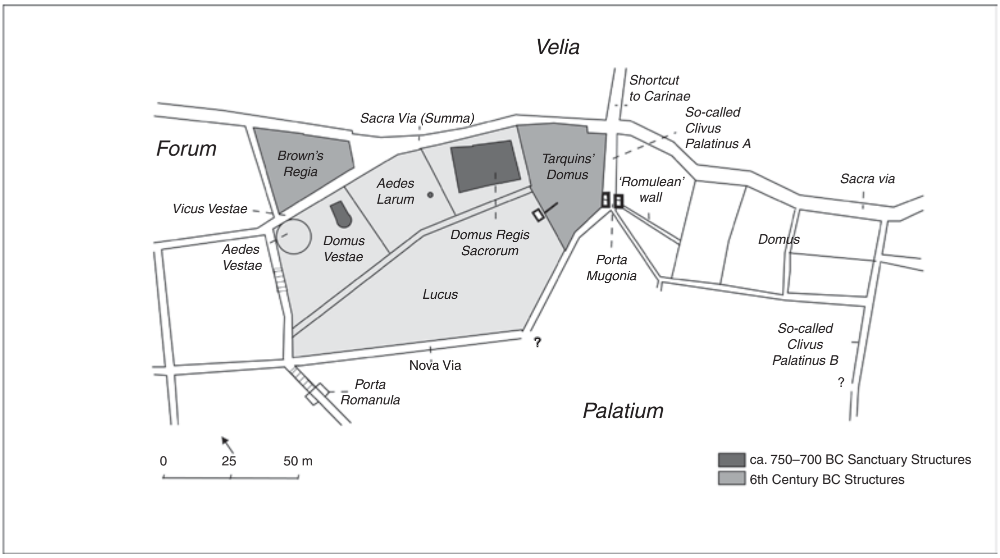
As reported by Solinus: 'Nam, ut adfirmat Varro auctor diligentissimus, Romam condidit Romulus, Marte genitus et Rea Silvia, vel ut onnulli Marte et Ilia; dictaque primum est Roma quadrata, quod ad equilibrium foret posita. Ea incipit a silva quae est in area Apollinis et ad supercilium scalarum Caci habet terminum, ubi tugurium fuit Faustuli. Ibi Romulus mansitavit'[123] ('For as Varro, the most careful author, asserts, Romulus the son of Mars and R(h)ea Silvia, or as some say Mars and Ilia, founded Rome; and it was first called 'square Rome' because it was placed at the balancing point. It begins from the grove which is in the precinct of Apollo and has its end at the top of the stairs of Cacus, where the hut of Faustulus was. That was where Romulus lived').[124]

Another scholar, Peter Wiseman, suggests a different interpretation of the same passage by Solinus; he rejects Brocato's identification of the original Casa Romuli and the consistent interpretation by Carandini of the Augustan Casa Romuli.[125] In fact, analysing the literary context of Solinus's passage, Wiseman observes that the interest of his source, Varro, is mainly chronological and not topographical and that 'ad equilibrium' has to be interpreted temporally and not spatially.[126] By recalling several of Varro's passages from book 18 of the *Antiquitates rerum humanarum*, he shows that this author believed that Rome had been founded at 'the balancing point' of some important events that occurred 1,100 years before and 1,200 years after Romulus.[127] The interpretation offered by Wiseman has the advantage of explaining Varro (Solinus's source) by referring to other passages by Varro himself rather than external sources. However, as Pensabene emphasised, the close connection of the monuments and cult places located in the area at the south-western corner of the Palatine Hill with places connected to the memory of Romulus cannot be denied.[128]

As for the Cermalus huts, the relationship between archaeological monuments on the Palatine Hill dating back to the eighth century BC and traditions about Romulus narrated in literary sources, which were composed many centuries later (Late Republican and Early Imperial Periods), remains uncertain. However, the importance of the Early Iron Age wall around the Palatine Hill, based solely on the archaeological evidence itself, remains strong, as the following points will demonstrate.

Firstly, the Early Iron Age wall around the Palatine was built at the foot rather than at the top of the hill, as would have been reasonable for purposes of defence. Secondly, as mentioned earlier, different ritual acts carried out at its foundation (a child cenotaph burial under the doorstep) and in connection with its obliteration (demolition pit and five inhumation ritual burials associated with the wall demolition, interpreted hypothetically as human sacrifices) suggest that the monument had a particularly sacred status. Finally, the wall is different from other systems of defence of similar age in Latium vetus, which are in general of the *agger* and *fossa* type (earth rampant and ditch), which implies a clear defensive scope; therefore, the wall around the Palatine seems to be more symbolic than practical.[129] All of these elements – the limited practical function of the walls, the ritual acts associated with it and the memorialisation of the monument over so many centuries – lend this monument a special status and suggest that it had a specific civic and political meaning for the Roman community.

In the past two decades the area investigated by Carandini on the north slope of the Palatine has been extended towards the Forum (westward) and has reached the Temple of Vesta and the House of the Vestals of Republican/Imperial times. In this area a few buildings and archaeological features of the late Early Iron Age and Archaic Age have been unearthed and identified with the so-called House of the Kings, the original phase of the Vesta sanctuary and the House of the Vestals.[130] Three plots have been excavated and hypothetically identified[131] (see Fig. 25). The first plot is that recognised by Carandini as the Domus Regia (House of the Kings), which, according to him, was inhabited by the first kings and was located within the Vesta sanctuary;[132] this house became later the Domus Regis Sacrorum (House of the King of Sacred Affairs) and was different from the Domus Publica (Official Residence of the King), to be identified, according to Carandini, as the House of the Tarquins and Servius Tullius and to be located outside the Vesta sanctuary, between the Domus Regia and the so-called Clivus Palatinus, which passed through the Porta Mugonia.[133] The second plot, in the same area, is the Aedes Larum (Shrine of the Household Gods or the Gods of the Local Place); it has been investigated and identified by Cristiana Cupitó.[134] The third plot, the Domus Vestalium or Atrium Vestae (House of the Vestals) with the Aedes Vestae (Vesta Shrine), has been investigated by Nikolaos Arvanitis.[135]

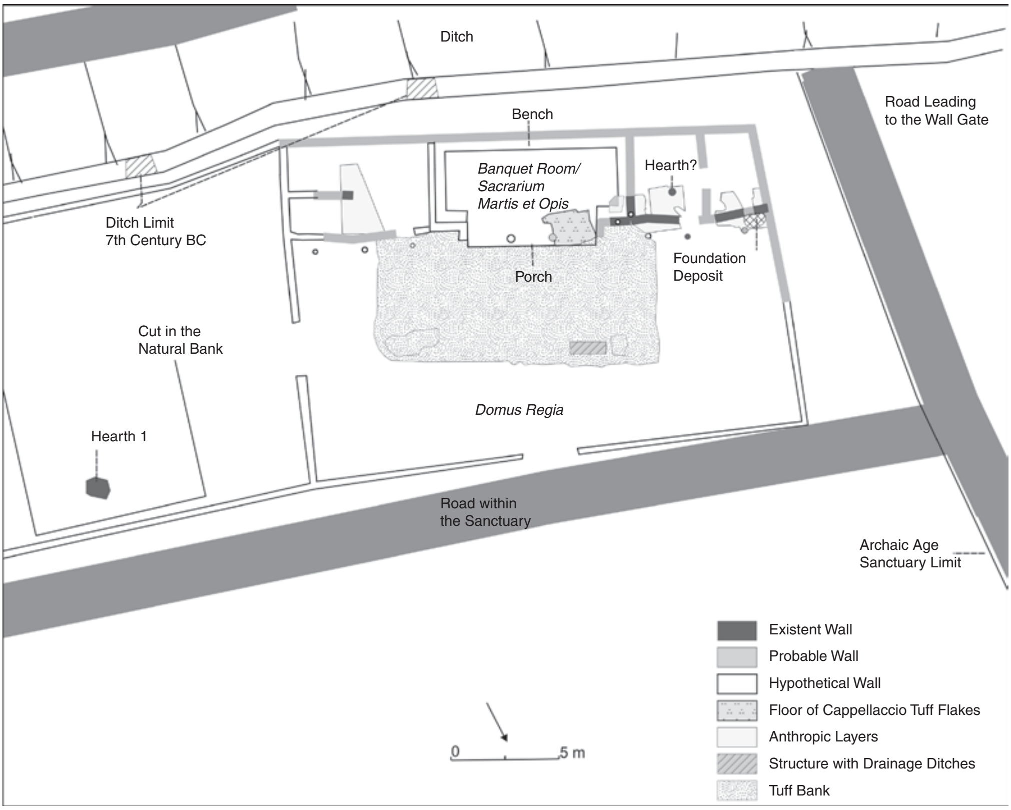

Velia
Shortcut to Carinae
So-called Clivus Palatinus A
Sacra Via (Summa)
Forum
Brown's Regia
Aedes Larum
Tarquins' Domus
'Romulean' wall
Sacra via
Vicus Vestae
Domus Regis Sacrorum
Domus
Aedes Vestae
Domus Vestae
Porta Mugonia
Lucus
?
So-called Clivus Palatinus B
Nova Via
?
Porta Romanula
Palatium
0
25
50 m
ca. 750–700 BC Sanctuary Structures
6th Century BC Structures

25. Rome, area of the Vesta sanctuary: Orientalizing and Archaic Age monuments. (Redrawn after Carandini 2007, fig. 40, p. 66.)

The recent excavation of the so-called Domus Publica, originally published by Gianfilippo Carettoni,[136] has uncovered Archaic and even late Early Iron Age structures, which preceded the monument of the Late Republican and Imperial Periods.[137] The most ancient phase (house 1) was a very large rectangular building (about 8 m long and 4–5 m wide), orientated NE-SW, with rammed-earth walls (*pisé*) and an earth and crushed tuff pavement. The front face of the building was probably equipped with a small 'portico' (porch, attested by a posthole) at the entrance (to the southern side), and most likely there was also a rectangular open space (about 12 m long and between 4 and 8 m wide), which is attested by postholes along the boundaries. This building, which was probably also bounded by a low stone wall, has been dated to about 750 BC or slightly earlier and has been identified with the first Domus Regia, or House of the Kings.[138]

Subsequently this house constituted the central room of an enlarged building (house 2) (about 22 m long and 5 m wide), constructed with the same technique but with a more monumental entrance (a porch supported by three wooden posts). The construction of this new building was distinguished by a foundation rite (infant *enchytrismós* burial), and its central room was equipped with earthen benches along the walls (about 0.50 m wide), probably used for ritual banquets and/or communal ceremonies[139] (Fig. 26).

In a smaller room on the east side of the central room, a hearth was found and another one (hearth 1, with phases from the middle eighth until the end of the seventh century BC) was excavated outside the building about 9 m from the house, in a special reserved area (delineated by a cut in the natural


Ditch
Bench
Road Leading to the Wall Gate
Banquet Room/ Sacrarium Martis et Opis
Hearth?
Ditch Limit 7th Century BC
Porch
Foundation Deposit
Cut in the Natural Bank
Domus Regia
Hearth 1
Road within the Sanctuary
Archaic Age Sanctuary Limit
Existent Wall
Probable Wall
Hypothetical Wall
Floor of Cappellaccio Tuff Flakes
Anthropic Layers
Structure with Drainage Ditches
Tuff Bank
0
5 m

26. Rome, area of the Vesta sanctuary: so-called House of the Kings 2 (ca. 750–725 BC), plan of the evidence with hypothetical integrations. (Redrawn after Carandini 2007, fig. 35, p. 62.)

clayey soil) under an absidal building dated to the Late Republican and Early Imperial Periods (second century BC–64 AD). The conspicuous presence of storage and food preparation pots in this hearth suggested to the excavators that it was the service area for the preparation of meals consumed in the house.[140] If the identification of the Late Republican/Early Imperial building by Cristiana Cupitò with the Aedes Larum is correct, the hearth, because of its topographical continuity with the later building, could be interpreted as the first sacred hearth of the Vesta cult.[141]

After some minor modifications, the large rectangular house was destroyed by the end of the eighth century BC, and its remains (including banquet services) were ritually deposited in two circular pits (one was about 3 m in diameter and 0.65 m deep and sealed by a layer of pure clay; the other was slightly smaller), which were dug into the destruction layers of the building. Another infant *enchytrismós* burial was found nearby. According to the excavators, this burial could be interpreted either as the destruction rite of this house or as the foundation rite of the following one or, more likely, as a combination of the two. It has been observed that the sequence of construction phases excavated and identified for this house covers exactly the same sequence of events detected for the earthen wall around the Palatine.[142]

The construction of house 2 was dated to ca. 750–725 BC by the presence of a dark *impasto* cup in the foundation rite/infant burial, while its destruction and the subsequent building phase (with another destruction/foundation rite) were dated to between the end of the eighth century and the beginning of seventh century BC. On the basis of this date, this second phase of the building has been identified with the house of the traditional figure of Numa Pompilius (ca. 715–672 BC), connected by literary sources to the Vesta sanctuary.[143] A third phase (house 3), dated between 700 and 650 BC, was also identified on the basis of very scarce evidence (some pavement layers and some residues of associated clay walls). In the last phase (house 4), the building was monumentalised: rammed-earth walls (*pisé*) were now constructed on tuff stone foundations, and for the first time the building had a tiled roof. This house has been related to the royal residence of the traditional figure of Ancus Marcius (ca. 640–616 BC), which could have contained luxury *symposium* vessels similar to those in the princely tombs of Praeneste.[144] A radical change in the plan of the house occurred with the subsequent phase (house 5), dated to ca. 600 BC, when the rectangular open space in front of the house became a courtyard surrounded by several rooms. This courtyard eventually became the *atrium* (indoor courtyard) of a canonical Roman house.[145]

This radical modification has been related to the institutional reforms and the laicisation of the monarchy achieved by the Tarquins. At this point, the royal house (Domus Regia of the first kings = houses 1–4) became the House of the King of Sacrifices (Domus Regis Sacrorum = house 5), while the Tarquins moved their residential house (Domus Publica) outside the Vesta sanctuary, towards the east, between this and the Porta Mugonia (cf. Fig. 25). At this point the hearths of the *lares* were separated from the residential house of the kings (now Domus Publica), and the sacred relics of Mars and Ops (*sacraria Martis* and *Opis*) were moved to the Regia excavated by Brown.[146]

The most ancient evidence from the area of the Domus Vestalium or Atrium Vestae was until recently limited to a few remains of small huts and hut-like enclosures, dated to the first half of the seventh century BC, and compared with similar features in the area of Brown's Regia.[147] But the new excavations, directed by Carandini, started to uncover more layers and structures dating to the seventh century BC and eventually some important features of the eighth century BC.[148] In particular, a very big oval hut, 4.5 m wide and 10 m long, with hearths, cooking fires and storage pits was uncovered, and another big hut was excavated as well. On the basis of their appearance and location within the area of the Atrium Vestae, these huts were identified respectively with the House of the Vestals and the original cult place of Vesta.[149]

Carandini's research on the beginning phases of Rome has not been limited to new excavations; the material culture and stratigraphic sequences from old excavations have also been re-evaluated to gain a better understanding of the ritual and political organisation of the topographical system of the area from the Palatine to the Forum to the Capitolium. According to this scholar, the area of the Vesta sanctuary, the Forum and the Capitolium/Arx with their monuments constituted a coherent topographical system, following a well-defined and organised plan created during the eighth and seventh centuries BC (*Il progetto della prima Roma*, or 'The project of the first Rome').[150] For instance, Carafa's new examination of the materials from well B near the *tholos* of Vesta demonstrated a continued ritual activity in the area from the middle of the eighth century BC to around 630 BC. No objects with a clear ritual or cult connotation were identified, but a large percentage of jars (*ollae*), which are often related to cult and ritual activities (about 30%), was calculated.[151]

Carafa also re-examined the stratigraphic sequence of the streets excavated between the Atrium Vestae and Brown's Regia (Vicus Vestae) and concluded that the oldest layer (layer 10, the first 'pebble street') could date to between 750 and 700 BC; that layers 9 and 8 (the first and second streets) contained materials that date generically to Latial Phase IVB (640/630–580 BC); that layer 7 (the fourth street) should be dated to between 575 and 550 BC for stratigraphic reasons; and finally, that layer 6 and 5N (the fifth and sixth streets) could be dated, according to materials and stratigraphic position, respectively to 550–520 BC and to ca. 500 BC.[152]

A geomorphologic and topographic study of the valley between the Palatine and Capitoline Hills has brought into question the traditional interpretation of the Velabrum as a swamp area occupied by marshes and drained only by the Tarquins. According to the geomorphologic reconstruction of Alber J. Ammerman and Dunia Filippi, the valley contained only a small river.[153] It was probably flooded seasonally by the Tiber's floodwaters, but a permanent marsh was limited to a small triangular area between the Palatine, Capitoline and Aventine Hills.[154] The valley, which separated the Capitoline settlement from the Palatine settlement, was an important route from the sea and the mouth of the Tiber towards the interior and the mountains, especially for the salt trade.[155]

This connection between the Tiber, Rome and the salt trade has always been accepted by scholars,[156] but the potential date of the port of trade (*emporium*) at the foot of the Aventine near the cult place of the Ara Maxima has long been debated. According to Filippi, the antiquity of the Ara Maxima port of trade is confirmed by its connection with two very old cults related to livestock and the salt trade (Cacus for the pre-urban period and Hercules for the proto-urban and urban periods) and by the presence of eighth century BC Greek pottery (Middle and Late Geometric) found in secondary depositions in the excavation of the sacred area of S. Omobono.[157]

The stratigraphic sequence, excavated by Boni, on the south side of the so-called Equus Domitiani and published by Gjerstad has been revised by Dunia Filippi, and a new analysis of the materials associated with different layers has been carried out by Elisa Gusberti.[158] This combined research has also produced new results on the oldest phases of the Forum. On the one hand, layers 22A–23 of Boni's excavation should be related to the second pavement of the Forum (until now considered the first) and should be dated to 675–650 BC (until now they were dated to 650–600 BC).[159] Additionally, layers 24–28 should be connected with the first real organisation of the area of the Forum and dated to 725–700 BC or, more cautiously, to 675 BC. The dating of these layers is currently debated. In fact, they were associated with three inhumation burials (a male, a female and a child), which have been dated by carbon-14 to the Final Bronze Age, Latial Period I (1180–930 BC for the male and 1250–990 BC for the female burial). However, according to Filippi the dating based on grave goods is more consistent with the contextual stratigraphic sequence and therefore more acceptable.[160]

The so-called *doliola* (earthen pots), a group of pottery vases dated to 675–650 BC that were found in a rectangular limestone container deposited in the foundation of the so-called Equus Domitiani should probably be interpreted as a foundation deposit connected with the completion of the first pavement of the Forum (the burials associated with layers 24–28 could have been part of the same ritual act) or the inauguration of the construction of the second pavement.[161]

The archaeological evidence related to the Comitium and the Volcanal from their origin until the Augustan Age has been completely revised by Paolo Carafa.[162] This reconstruction, from the beginning of the Regal Period to the beginning of the Republican Period, will now be briefly summarised. The most ancient Volcanal (sanctuary of Vulcanus) is identified by Carafa as a small rectangular pit and an elliptical basin, excavated in a large grey granular tuff (cappellaccio) rock, which collapsed from the top of the Capitoline Hill at an unidentified time before there was any human activity in the area. Carafa reconstructed this sanctuary as a small area (ca. 60 m^2) enclosed by a fence, surrounding a lotus plant and a cypress tree (according to literary sources).

The most ancient objects, found in the Niger Lapis (Black Stone) votive deposit (750–700 BC), might be related to this sanctuary. To the north of the supposed Volcanal, between this and a small river from the Tullianum Spring (parallel to the Via Sacra), there is a flat area (ca. 300 m^2) which could be identified with the original place of civic assemblies (Comitium). Traces of a sand and gravel pavement with a hearth have been excavated at the south-west corner of this empty area, but there is not enough evidence to offer an interpretation.[163]

Carafa dated the first organisation of the area which could be identified with the Comitium to ca. 650–630 BC. At this time, the area was deeply excavated in order to create a sub-triangular depression with sloping sides (starting with 250 m^2 at the top and decreasing to 150 m^2 at the bottom), reaching a maximum depth of ca. 1.50 m. This organisation of the area was dated by the material found in the pavement (compacted earth mixed with clay, carbon ash and pebbles) excavated at the bottom of the depression.[164]

During the Recent Orientalizing Age (630/620–580 BC) and the Early Archaic Age (ca. 580–550/540 BC) a new pavement made of compacted earth with gravel and coarse tuff fragments was constructed in the area. Possibly (this interpretation is merely hypothetical) the first speakers' platform (a predecessor of the *rostra*, with a ritually inaugurated space – the *templum* – from which orators spoke) was evidenced by some tuff steps, constructed in the south-west corner over a layer of compacted earth (with traces of fire residue and carbon ash) mixed with pebbles and coarse tuff fragments.[165] Around 530 BC, the area was covered by a new pavement, which hid the tuff rock of the Volcanal: only the basin was still open, and by its side the famous inscribed *stela* of the Lapis Niger was placed above a platform made of tuff slabs.[166]

By the end of this phase, around 500 BC, a new pavement was created and the Comitium was separated from the platform to the south-west by a channel constructed with tuff slabs.[167] By the beginning of the Republican Period there was a new pavement which completely covered the older Volcanal, and the area was monumentalised with the construction of huge *cappellaccio* tuff platforms on all three sides. The platform on the south-west side, towards the Forum, should probably be identified with the *rostra*; the platform on the north side, towards the *argiletum* could be related to the *tribunal*, and the hypothetical platform assumed on the east side, towards the Capitolium could be identified, according to Carafa, with the *graecostasis* (a stand reserved for visiting foreign ambassadors).[168]

The votive deposit from the Capitoline Hill has also been re-examined. Some objects dated to the eighth century BC have been identified by Margherita Albertoni, among the more numerous materials of the Recent Orientalizing (630/620–580 BC) and Archaic (sixth century BC) Ages. However, this scholar postulated that they probably originated from funerary contexts, similar to the ones excavated nearby, and that they should not be considered part of the original votive deposit.[169] By contrast, Elisa Gusberti has demonstrated that specific votive materials, such as miniature votive vessels, dated to the eighth century BC, were pertinent to this deposit. Therefore, the most ancient cult activity documented on the Capitoline Hill could hypothetically be related to the cult of Iovis Feretrius, attributed by literary sources to Romulus.[170]

Rome during the Second Regal Period (End of the Recent Orientalizing Age, or Latial Phase IVB, and the Archaic Age, ca. End of the Seventh to End of the Sixth Century BC)

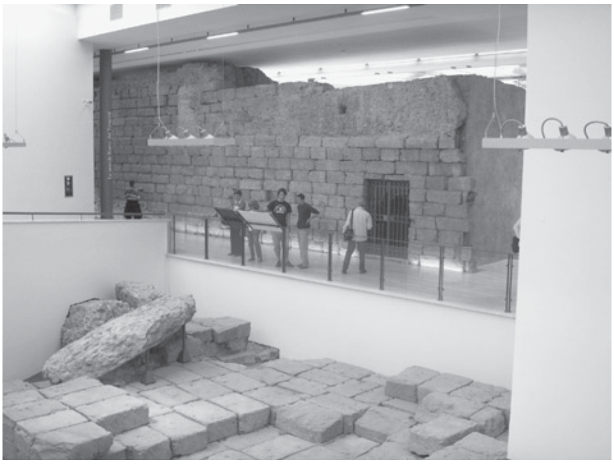
The period of the last three kings of Rome, whose existence is attested by literary accounts, Tarquinius Priscus (ca. 616–578 BC), Servius Tullius (ca. 578–534 BC) and Tarquinius Superbus (ca. 534–509 BC),[171] is often termed the age of the Etruscan kings because of the influence of the Etruscan culture and style on Roman material culture and monuments of the time.[172] If an Etruscan hegemony over the city of Rome is currently an unfashionable theory, a commercial interest among the Etruscans in the region to the south of the Tiber (Latium vetus) is quite probable, and this opinion has been accepted by several scholars.[173]

At this time Rome was completely renovated in accord with what is considered to have been the first town planning in the history of the city: the *pomerium* was enlarged and the city was surrounded by stone fortification walls;[174] marshes were drained, streets and drains were built; Romulean buildings were restored, rebuilt or monumentalised; and the city was adorned with stone-foundation temples embellished with extensive sculptural decoration.[175] As Carafa noted, it is probably not by chance that 'maximus' was added to the names of the most representative monuments of this activity: the Temple of Iovis Optimus Maximus, the Circus Maximus and the Cloaca Maxima.[176] The existence of the so-called Great Rome of the Tarquins, suggested by Giorgio Pasquali in the 1930s and more recently contested by Emilio Gabba, has been confirmed by excavations and archaeological research conducted in the past few decades.[177]

For example, the Archaic Mater Matuta Temple in the S. Omobono sanctuary (the most ancient example of a Tuscanic order in Rome) was built during the second quarter of the sixth century BC, rebuilt around 530 BC and finally destroyed by the end of the sixth century BC. These dates based on the archaeological evidence are very close to the traditional chronology reported in literary accounts for the reigns of Servius Tullius and Tarquinius Superbus, and to the end of the Tarquin dynasty (509 BC).[178]

Another impressive example of the Tuscanic order adopted in Roman Archaic architecture is the Capitolium temple (Fig. 27), dedicated to Iuppiter Optimus Maximus (Jove, the Best and the Greatest), together with Juno and Minerva, the other two deities of the Capitoline triad. As mentioned by ancient authors, the building was most likely begun by Tarquinius Priscus and completed by the last king of Rome, Tarquinius Superbus, although it was not inaugurated until the beginning of the Republican Period in 509 BC.

This account seems to be consistent with the archaeological evidence. In fact, recent excavations have dated the building activity for the construction of the temple to the second half of the sixth century BC, as suggested by



27. Rome, Capitoline temple: *podium* foundations contained in the new wing of Palazzo dei Conservatori Museum. (Photo by the author.)

the pottery found in the foundation trench of the basement of the temple.[179] According to the canons of the Tuscanic temple, the building was constituted by three cells, with the central one larger than the lateral two, which were preceded by a *pronaos* (porch) and stood on a high *podium* (platform base), with an entrance staircase to the front.[180] The building was most likely surrounded by columns on only three sides,[181] although some scholars have suggested a different reconstruction, in the form of a Greek-type peripteral colonnade.[182]

While the Capitolium temple has technical and formal characteristics that are very similar to those of other central Italian Archaic temples – for example, the Dioscuri temple in Rome and temple A in Pyrgi, both dated to the first half of the fifth century BC[183] – because of its unusually large dimensions, some scholars have considered the possible influence of Greek-eastern prototypes and external craftsmanship, such as 'technical support' by specialised Greek-eastern skilled workers.[184] Sacred buildings of similar dimensions can be found in Asiatic Ionia, for example, the Artemision in Ephesos, the Heraion in Samos and the Didymaion in Miletus.[185]

As already mentioned, not only magnificent Tuscan temples were realised under the reigns of the Tarquins; several monuments and complexes whose origin can be traced back archaeologically to the first Regal Period were restored or monumentalised during this time, for example, the Forum and the Comitium with the Volcanal, the Domus Regia and the Atrium Vestae and the area of the Magna Mater Temple[186] (see Table 8). In addition, as emphasised by Filippo Coarelli[187] and more recently by Paolo Carafa, if the Temple of Mater Matuta in the sacred area of S. Omobono and the Capitoline temple are two buildings commissioned by the Tarquins and connected with the triumphal procession (*pompa triumphalis*), it is possible (even though not demonstrable,

Table 8. Main archaeological contexts in Rome during the Regal Period (recent excavations)

	Latial Phase IIIB (800/775–750/725)	Latial Sub-Phase IVA1 (750/725–670/660)	Latial Sub-Phase IVA2 (670/660–630/620)	Latial Phase IVB (630/620–580)		Early Archaic Age (580–540/530)	Late Archaic Age (540/530–509)	Early Republican Period (509–400)
	Romulus (753–715)	Numa Pompilius (715–672)	Tullus Ostilius (672–640)	Ancus Marcius (640–616)	Tarquinius Priscus (616–578)	Servius Tullius (578–534)	Tarquinius Superbus (534–509)	
Regia (Brown)		Huts, road		Inundation, demolition pits, road	Regia 1 & 2, road	Regia 3, road	Regia 4, road	Regia 5, road
Servian Wall						Grey granular tuff blocks (*cappellaccio*)–Osco-Italic foot		
S. Omobono sanctuary				Cult hut	Ritual pits, Etruscan inscription	Mater Matuta 1 & 2, Fortuna	Mater Matuta 2, Fortuna	Mater Matuta 2, Fortuna
Magna Mater or Victory sanctuary			Vot. Mat., pits, Drain. Str.	Vot. Mat., pits, Drain. Str.	Vot. Mat., pits, Drain. Str.	Terracottas, cisterns	Terraces, *hypogeum*, *auguratorium* temple	*Auguratorium* temple, cisterns
Cermalus huts	Huts, pits	Huts, pits	Huts, pits	Huts, pits	Huts, pits	Huts, pits	Tuff base, Vot. Dep.	Tuff base, Vot. Dep.
Palatine – northern slope	1st wall (earth), road	1st wall demolition, burials	2d wall (earth), road		3rd wall (tuff), road	3rd wall (tuff) doubled, road	Aristocratic houses, Via Sacra, Drain. Str.	Aristocratic houses, Via Sacra, Drain. Str.
Atrium Vestae	Ovoid hut, road	Ovoid hut, road	House with stone foundation & rammed-earth walls				Domus Vestalium	Domus Vestalium

Aedes Larum		Hearth 1 & Hearth 2	Hearth 3	Hearth 4, pit with tiles	Silos	No stratigraphy		
Domus Regia	House 1	House 2 with benches	House 3 with benches	House 4 with stone foundations	House 5 with courtyard & later atrium (Domus Regis Sacrorum)			
Tholos of Vesta	Non-Vot. Mat. (*ollae*)	Non-Vot. Mat. (*ollae*)	Non-Vot. Mat. (*ollae*)	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.
Forum		Layers 24–28, burials	Layers 22A–23, *doliola*	Layers 22A–23, *doliola*	Tuff Pavem. Cloaca Max.	Tuff Pavem. Cloaca Max.	Tuff Pavem. Cloaca Max.	Tuff Pavem. Cloaca Max.
Comitium	Materials from the Lapis Niger, sand & gravel pavement, Volcanal?		Depression, 1st pavement, Volcanal?	2d pavement (soil),1st oratory platform (*templum*),Volcanal?			New tuff pavement, Lapis Niger	New pavement, Lapis Niger, tribunal & *graecostasis*
Capitoline deposit	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.	Vot. Mat.
Meta Sudans	Road system	Road system	Road system	Road system, Curiae Vet., Vot. Dep.	Road system, Curiae Vet., Vot. Dep.	Road system, Curiae Vet., Vot. Dep.	Road system, Curiae Vet., Vot. Dep.	Road system Curiae Vet., Vot. Dep.
Giardino Romano	Burials, metallurgy?	Burials, metallurgy?	Juv. burials, metallurgy, roofed buildings	Juv. burials, metallurgy, roofed buildings	Juv. burials, metallurgy, Capitoline temple foundation trenches	Juv. burials, metallurgy, Capitoline temple building layers	Juv. burials, metallurgy, Capitoline temple building layers	Juv. burials, metallurgy, Capitoline temple

Note: Archaic Age monumental phases are highlighted in grey. All dates are BC. Abbreviations: Vot. Mat., votive material; Vot. Dep,. votive deposit; Drain. Str., drainage structures; Juv. burials, = juvenile burials; Tuff Pavem., tuff pavement; Curiae Vet., Curiae Veteres; Cloaca Max., Cloaca Maxima.

given the absence of any archaeological evidence) that a third monument, the Circus Maximus, connected with the Tarquins by literary sources, should also be dated to this time.[188]

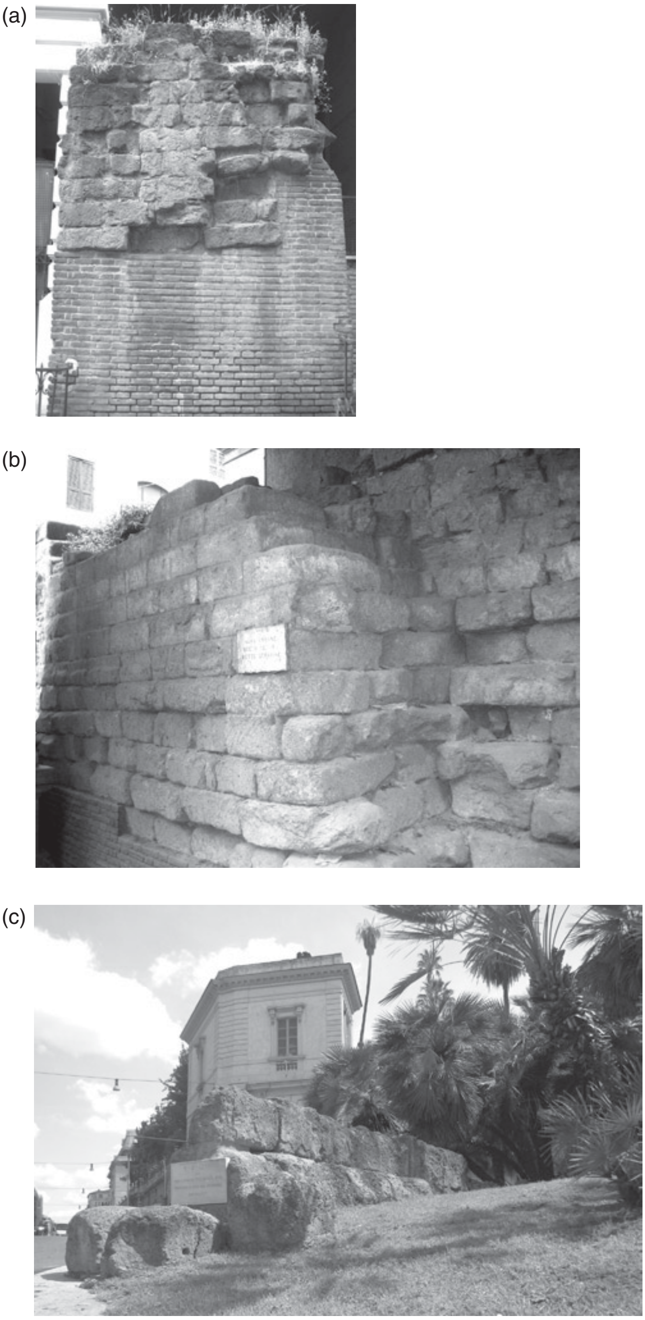
An archaic phase of the Cloaca Maxima has not yet been found, and the earliest segment has been dated to the Middle Republican Period. However, as Carafa convincingly pointed out, an arched cistern with a rectangular plan, dated to ca. 530 BC, was excavated on the north-eastern slope of the Palatine, and another monumental arched drainage channel, dated to the Archaic Age, was discovered at the Meta Sudans excavation in the Coliseum valley.[189] Carafa also noticed that the aristocratic houses investigated on the north-eastern slope of the Palatine along the Via Sacra and dating back to ca. 530 BC were served by a drainage channel, excavated under the street, which implies that a major water collection system was built in the area of the Forum (the Cloaca Maxima) to receive effluent from the whole drainage system.[190] As also noted by the excavators, this is the first proper urbanisation of the area with stone-walled houses, streets and a drainage system.[191]

These houses demonstrate that the classical model of the Roman house with an indoor courtyard (*atrium*), a square open roof (*compluvium*) and a shallow rectangular pool (*impluvium*) to collect rainwater draining inwards from the slanted tiled roof was also probably being developed in Rome by this time.[192] It is not unlikely, but has not been definitively demonstrated, that these houses already had a *tablinum*, a room generally situated on one side of the *atrium* and opposite the entrance, which was normally decorated with frescoes and family busts and contained family archives.

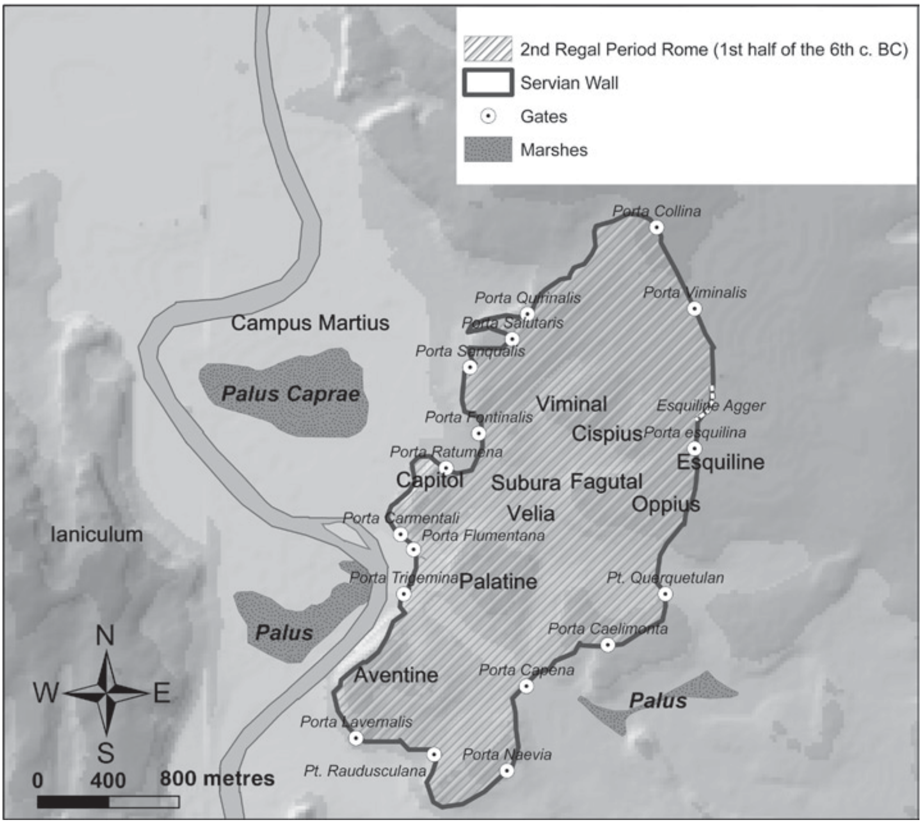
Finally, it should be noted that while the earthen wall around the Palatine was obliterated and only key points, such as the door gates, were restored in stone in order to commemorate the monument, according to literary accounts the *pomerium* was enlarged and the city was surrounded by stone fortification walls with an *agger* (earth rampart) under the reign of Servius Tullius (578–534 BC ca. in the traditional chronology).[193]

Despite the scepticism of some scholars,[194] the existence of continuous Archaic Servian fortifications has been supported by Gabriele Cifani.[195] Cifani re-examined all of the archaeological evidence available and suggested that Archaic walls, built with square grey granular tuff (*cappellaccio*) blocks, cut to the Osco-Italic foot (corresponding to ca. 0.272 m), preceded the later fortifications of the fourth century BC; the latter were built with square yellow lithoid tuff (*grotta oscura*) blocks, which were two Roman feet in height (about 0.60 m)[196] (Fig. 28).

It has been suggested by Lorenzo Quilici that Rome under the Tarquins could have had an extent of about 300 ha and a population of 30,000–40,000 inhabitants.[197] On the basis of calculations originally performed by Karl Julius Beloch, Carmine Ampolo gives an extent of 285 ha for the Rome of the ‘four



28. Rome, Quirinal Hill, 'Servian' Wall: (a) external prospect and (b) internal section of the Archaic portion (grey granular tuff blocks, first half of the 6th century BC), found in Via Giosuè Carducci (from Cifani 2008, figs. 60 and 61, pp. 72–73, with kind permission of the author); (c) Late Republican or Sillan restoration (yellow lithoid tuff blocks, 2d–1st century BC) of the Porta Sanqualis in Piazza Magnanapoli (photo by Luigi, Letizia and Anna).


2nd Regal Period Rome (1st half of the 6th c. BC)
Servian Wall
Gates
Marshes
Porta Collina
Porta Viminalis
Porta Quirinalis
Porta Salutaris
Porta Sanqualis
Campus Martius
Palus Caprae
Viminal
Esquiline Agger
Porta Fontinalis
Cispius
Porta esquilina
Porta Ratumena
Esquiline
Capitol
Subura
Fagutal
Oppius
Porta Carmentali
Velia
Porta Flumentana
Ianiculum
Porta Trigemina
Palatine
Pt. Querquetulan
Palus
Porta Caelimonta
N
W
E
S
Aventine
Porta Capena
Palus
Porta Lavernalis
Porta Naevia
Pt. Raudusculana
0
400
800 metres

29. Rome within the 'Servian' Wall in the second Regal Period (first half of the 6th century BC). (Reconstruction after Cifani 1997a, b.)

Servian regions' and 426 ha for the city within the so-called Servian Wall.[198] By a rather crude calculation of the area of Rome within the Archaic wall, based on the reconstruction of Gabriele Cifani performed with Arch View GIS 3.2, the measurement is about 364 ha (Fig. 29). Therefore, a figure of about 360–400 ha seems reasonable.

3.2. CONCLUSIONS

The reconstruction of the early phases of Rome and the interpretation of the beginning phase of the city up to the middle of the eighth century BC according to late literary accounts has been a highly debated topic based on a great deal of research. The debate has been intensified in the past few decades by controversial discoveries during excavations conducted by Alberto Cazzella, Andrea Carandini and others on the Capitoline and Palatine Hills.

With reference to pre-historic times, the importance of the Bronze Age Capitoline Hill settlement and of the natural ford beneath it has been confirmed by Alberto Cazzella's investigation in the area of the Giardino Romano.[199]

Sporadic settlement evidence and burial evidence might also suggest a stable occupation of the Palatine Hill during the Recent (thirteenth century BC) and Final Bronze Age (twelfth and eleventh centuries BC). If the entire area of the morphological unit is assumed to be an homogeneous settlement entity (with a very low density occupation pattern and with hut compounds widely spread and interspersed with gardens, productive areas and free spaces), both the Capitoline Hill and the Palatine Hill appear to be among the largest Bronze Age settlements in the whole of Latium vetus.

Even if the evaluation of the extent and duration of the earliest settlements on the Capitoline and Palatine Hills is controversial, ranging from the minimal estimation of Cazzella to the generous assumptions by Carandini, most scholars agree that a major stage in the development of Rome is represented by the shift of formal cemeteries from the area of the Temple of Antoninus and Faustina at the foot of the Palatine Hill to the Quirinal and Esquiline Hills, because this implies a significant enlargement of the area devoted to domestic pursuits.[200] The magnitude of this growth, dated to Latial Phase IIB/IIIA (ninth century BC) or possibly as early as Latial Sub-Phase IIA2 (end of the tenth / beginning of the ninth century BC), according to Marco Bettelli,[201] has been variously estimated.

For Latial Phase IIA (second half of the tenth century BC) Guidi calculated that the system consisting of the Palatine, Forum and Capitolium and possibly Velia covered an area of 95 ha;[202] Cazzella gives a similar estimation (about 100 ha) but only from Latial Phase IIB (first half of the ninth century BC) onwards.[203] The calculations presented in the present work yield a figure of about 54 ha for the system around the Capitoline and Quirinal Hills (the Colles, according to Carandini) and from 37 to 60 ha for the system around the Palatine, Velia and Cermalus (the Montes, according to Carandini), which makes a total of about 90–114 ha for Rome during Latial Phase IIA or thereabouts.

However, with the shift of the funerary areas and the growth of the city dated to Latial Phase IIB/IIIA, it seems reasonable to calculate the extent of Rome as about 200 ha,[204] which, as various scholars have already suggested, makes this city comparable to contemporary major Etruscan settlements.[205] From these figures (even adopting the lowest, prudent calculations by Cazzella), it is clear that the transformations that occurred in Rome during the eighth to the seventh century represent more a qualitative revolution[206] than a physical modification of the city.[207] As shown in this chapter and summarised in Table 8, many monuments and crucial political and sacred complexes of Archaic Rome have early phases dating back to the eighth and the seventh century BC.

The appearance, during the eighth/seventh century BC, of monuments such as the wall around the Palatine, the so-called House of the Kings, the Capitoline Hill votive deposit and other religious foci, as well as the Forum and the Comitium for civic assemblies indicates the birth in Rome of a unified community of citizens and a new political entity, even though the urbanisation of the city (with stone buildings, monuments and temples) would not be fully realised until the Archaic Age. The importance of urban walls as a manifestation of the symbolic and ideological unity of a city and its political community has been widely demonstrated in several historical contexts in different times and parts of the world.[208] In addition, recent excavations have also revealed earthen fortification walls dated to the eighth century BC in other centres of Etruria (Veii, Vulci and possibly Tarquinia)[209] and Latium vetus (Fidenae).[210] Recently a stone fortification wall dated to the sixth century BC in association with a ditch containing material of the seventh century BC, and therefore possibly even earlier, has been excavated in Crustumerium.[211]

Finally, the creation in Rome around the middle of the eighth century BC of foundation monuments, such as the wall around the Palatine, and of political and sacred foci, such as the Vesta sanctuary, can be correlated with the process of defining settlement boundaries, as documented in several Latin centres during the eighth century BC. Surveys conducted in several settlements have demonstrated that by this time the concentration of pottery intensifies on the top of plateaux (later occupied by the Archaic cities), while sloping sites are abandoned.[212] This indicates a clearer definition of settlement areas, which were already largely occupied from the beginning of the Early Iron Age and whose first occupation often dates back to the Bronze Age.

Evidence from both surveys and excavations has contributed to the definition of the urban limits and civic identity of Rome and Latium vetus to the middle or end of the eighth century BC. This has not been just an attempt to date every single significant monument or context on the basis of scarce and tenuous evidence. On the contrary, even scarce evidence, provided, for example, by huts, pebble streets or votive deposits, can be meaningful when considered in its appropriate context.

The developments leading to urbanisation (well before the first colonies were established in southern Italy) that have been described in this account of the beginning and early phases of the city of Rome will be echoed in the analyses undertaken at the territorial (Chapters 4 and 5) and regional (Chapter 6) levels and enriched by other lines of argument (Chapter 7).

FOUR

THE TERRITORIAL LEVEL: DEFINITION AND DATING OF THE *AGER ROMANUS ANTIQUUS*

4.1. INTRODUCTION

In a conference on ancient towns and their territories held in Santa Maria Capua Vetere, Caserta (1999), Silvio Panciera decried the lack of knowledge of the territory of primitive Rome and suggested a number of methods for defining the boundaries of the *ager Romanus antiquus*. These included analysing place names referring to limits, considering tribes and municipal inscriptions, consulting literary sources and employing theoretical methods such as Thiessen polygons.[1]

In this chapter we will address the problem of defining and dating the *ager Romanus antiquus* by reviewing the literary approach already explored by several authors[2] and by employing new theoretical approaches using GIS applications.[3] Thiessen polygons will be constructed around Rome and other sites of pre- and proto-historic Latium vetus in order to define their notional territories. Then, land carrying capacity and visibility (viewshed)[4] analyses will be used to determine whether the *ager Romanus antiquus*, as defined by literary sources, was an area suitable for a proto-urban centre in terms of land exploitation and territorial control.[5]

4.2. THE *AGER ROMANUS ANTIQUUS*: LITERARY APPROACH

Sanctuaries at the Fifth–Sixth Miles around Rome as Limits of the Ager Romanus Antiquus

Since the middle of the nineteenth century, some scholars have suggested identifying the boundaries of the *ager Romanus antiquus* by a series of sanctuaries at about five to six Roman miles from Rome (i.e., about 6–9 km).[6] This idea is based on Strabo (63 or 64 BC–24 AD), who in his *Geography* mentions the Ambarvalia (from *ambulare*, 'to go round', and *arvum*, 'field'), a ceremony held in Festoi (a place between five and six miles from Rome) and in other boundary places at the same distance.[7] Working from this textual account, scholars have tried to identify similar boundary places in sanctuaries situated at the same distance from Rome, generally on main roads.

Located between the fifth and sixth miles outside Rome on the Via Campana was the Lucus Deae Diae (Grove of the Goddess of the Sky and Growth; the goddess was sometimes identified as Ceres). At this place every year, the Fratres Arvales (Arval Brethren), a body of priests that, according to literary sources, was founded by Romulus, performed a ceremony in which *piacula* (offerings) were offered to 'Janus, Jupiter, Mars, Juno, *Dea Dia*, *Virgines divae*, *Famuli divi*, *Lares*, *Mater Larum*, *sive deus sive dea in cuius tutela hie lucus locusque est*, Fons, Flora, Vesta, *Mater Vestae*, *Adolenda Commolenda Deferunda*, and sixteen *divi* of the imperial families'[8] ('Janus, Jupiter, Mars, Juno, Dea Dia, the Goddess of the Sky and Growth, the virgin female deities, the servant gods, the household gods, the mother of the household gods, the male deity or the female deity who protects this grove and this place, Fons, Flora, Vesta, the mother of Vesta, the goddess who presides over the felling of trees struck by lightning, and sixteen gods of the imperial families').

Thanks to a revival of this cult by Augustus (63 BC–14 AD), it is known that the female and male deities who protected the sacred grove and place of Dea Dia (*sive deus sive dea*) were respectively Mater Larum, the mother of the *lares*, or 'household gods', and Mars, the god of war.[9] The standing remains of the Dea Dia sanctuary, monumentalised by Spurius Carvilius Maximus in 293 BC, date archaeologically to the third century BC, with evidence of an important building phase under Augustus (63 BC–14 AD) and restorations in the Severan Age (second to third century AD).[10] The *Carmen Arvale* (the sacred song sung by Arval priests), however, seems to be earlier, because in this text there is no sign of the rotacism, which appeared in the fourth century BC.[11]

In addition, according to Scheid, the Latin occupation of the right bank of the Tiber valley can be dated to between the seventh and sixth centuries BC, when, in addition to existing sites with evidence of Etruscan material culture such as Colle S. Agata (Monte Mario), there appeared some traces of the Latin

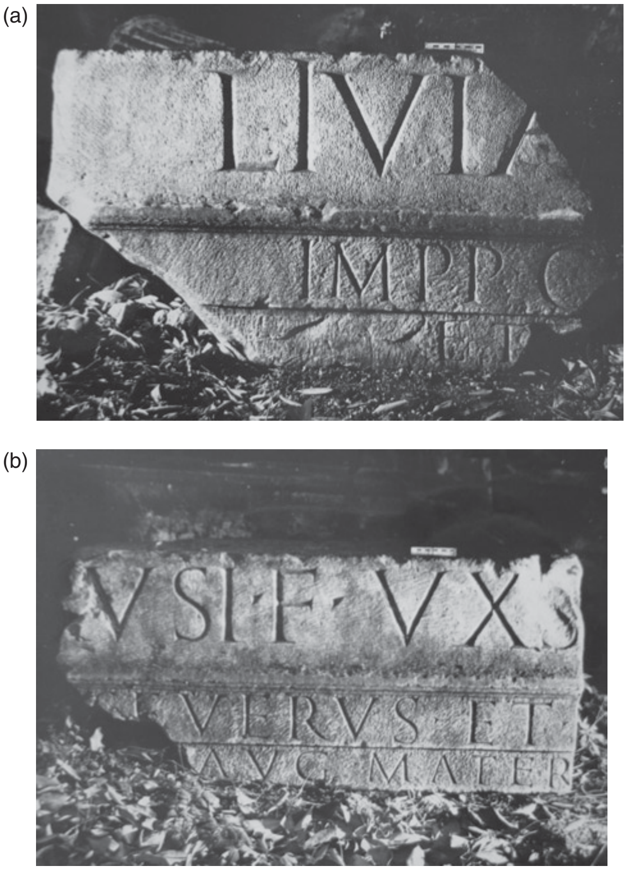
30. Bronze statuettes, probably from a votive deposit outside Porta Portese, at the first mile of the Via Campana, dated to the second half of the 6th century BC. (From Colonna 1991, fig. 4, p. 217.)

culture, such as the votive deposit near Porta Portese, dated to the sixth century BC.[12] Finally, if one believes the textual accounts, the institution of the Fratres Arvales is linked with Romulus, who conquered but twice lost the right bank of the Tiber.[13]

According to Ovidius, at the fifth–sixth miles of the 'via, quae populum Laurentes ducit in agros' ('the road which leads to the territory of Laurentum'), there was a sanctuary where the ceremony of Terminalia (Festival of Terminus, god of boundaries and protector of boundary markers) was celebrated on 23 February.[14] Terminus, identified with a boundary stone, was offered cereals, fruit and wine, which were deposited in a pit at the foot of the stone.[15] Even though the identification of this road, the Laurentina vetus, is uncertain (it is either the modern Pontina or Via Laurentina-Trigoria), both Giuseppe Lugli and Giovanni Colonna[16] have identified Terminalia as the site of Acqua Acetosa Laurentina, first occupied during the Final Bronze Age (ca. twelfth to the eleventh century BC) and then continuously from Latial Phase IIB (second half of the ninth century BC) to the Archaic Age (sixth century BC).[17]

Not far from the Dea Dia sanctuary, at the sixth mile of the Via Campana, was the sanctuary of Fors Fortuna (the Goddess of Luck, who brings prosperity and good fortune), a duplicate of the sanctuary at the first mile from Rome and in the Forum Boarium.[18] Fors Fortuna sanctuaries both at the first and sixth miles were founded, according to textual accounts, by Servius Tullius (ca. 578–534 BC) or Tarquinius Priscus (ca. 616–578 BC).[19] The archaeological evidence confirms an Archaic phase of the cult at both the sanctuary at the first mile (Fig. 30)[20] and the sanctuary in the Forum Boarium.[21]

At the fourth mile of the Via Latina there was the sanctuary of Fortuna Muliebris (Womanly or Female Fortune, an aspect of the Roman goddess of



31. Inscription fragments, probably from the Fortuna Muliebris sanctuary at the fourth mile on the Via Latina. (Rome, Antiquarium del Caelium, CIL, VI, 883, photo 7947–7948, Photo Archive of the Teaching Laboratory of Latin Epigraphy, University of Rome 'La Sapienza'.)

luck and fate),[22] hypothetically identified by Stefania Quilici Gigli in some temple architectural remains and a marble inscription found between Tor Fiscale and Roma Vecchia, near Via Quadraro (Fig. 31). The inscription attests to a building phase (dedication by Livia, *Drusi uxor*, the wife of Drusus) of the Augustan Age (63 BC–14 AD) and a restoration ('*Severus and Antoninus restituerunt*')[23] in the Severan Age (second to third century AD).

At the fifth mile of the Via Clodia there was the Robigo (literally 'mildew' or 'rust') sanctuary, to protect crops from diseases. A ceremony was celebrated on 25 April and consisted of a solemn sacrifice, conducted by the *flamen Quirinalis* (the priest who oversaw the cult of Quirinus), and of games in honour of Mars.[24] It is generally assumed that, since this sanctuary faced the territory of Veii, it pre-dates the conquest of the city (495 BC).[25] According to Andreas Alföldy, another sanctuary could possibly be identified at the fifth mile of the Via Appia, on the basis of the statue of Mars with wolves, cited by Livius, in this place.[26] As John Scheid emphasised, because these are boundary sanctuaries intended to protect the city and its fields, all the deities are linked to war and to agriculture.[27]

The importance of this boundary to the city is confirmed by persistent references over many centuries, including references to significant episodes in the literary sources. For example, at the fifth mile of the Via Appia there was a place called Fossae Cluiliae, which probably refers to the ditch excavated by Cluilius, the last king of Alba, around his camp when he moved against Rome. This is also the place where the well-known fight between the Horatii and Curiatii took place in the time of Tullius Hostilius (ca. 672–640 BC) and where the dead contenders were buried.[28]

Giovanni Colonna has noted the coincidence of the Fossae Cluiliae toponym (indicating a limit) and the presence of burials (indicating a liminal zone), attested by some bronze furniture related to a late-sixth-century chariot (most likely from a funerary context) which was said to come from the estate of Roma Vecchia along the Via Appia.[29] In addition, Giuseppe Lugli noted that at this point, near Casale di S. Maria Nuova and between the first *tumulus* (earth mound) supposedly of the Horatii and Curiatii and two others, the Via Appia has a bend that is not due to the natural morphology of the ground. According to this scholar this bend can be explained only if the intention of Appius Claudius Caecus (340–273 BC) was to commemorate the ancient Fossae Cluiliae, which marked the boundary between the Roman and Alban territories.[30]

The story of Coriolanus (beginning of the fifth century BC) is also connected with the Fossae Cluiliae. During his campaign against Rome, he stopped at the Fossae Cluiliae between the fourth and fifth miles of the Via Latina, where the later sanctuary of Fortuna Muliebris was built. Another episode related to Sulla is described by Appianus (95–165 AD):[31] when Sulla and Pompey (89 BC) advanced on Rome from Capua, Marius and Sulpicius, who governed Rome, commanded Sulla not to build his camp within forty *stadi* of Rome. Sulla promised not to do so, but then occupied the Esquiline Gate while Pompeius occupied the Collina Gate. This anecdote shows that forty *stadi* were considered a limit of the city territory which was not to be violated by hostile armies, and forty *stadi* are exactly five Roman miles.[32] This, once again, confirms that this limit was perceived as a boundary of the city territory. Finally, John Scheid has remarked that in 455 AD Genseric's Vandals coming from Portus Augusti along the Via Campana-Portuensis built their camp six miles from Rome, in the area of modern Magliana not far from the sanctuary of Dea Dia.[33]

All of these episodes, which occurred at different times during the history of the city, confirm that the memory of a boundary at the fifth–sixth miles was maintained for many centuries, right up to late antiquity, even though the effective territory of Rome had already exceeded those limits in the Archaic Age.

Topographical Reconstruction of the Fifth–Sixth Mile Boundary

On the basis of the literary accounts described in the preceding section, several scholars have attempted to topographically identify the boundary of the fifth–sixth miles around Rome. The topographical reconstructions proposed by both Giuseppe Lugli and Stefania Quilici Gigli have been taken into consideration in the present study for the purpose of defining the *ager Romanus antiquus* boundary.[34] However, the more recent reconstruction proposed by Giovanni Colonna has been followed more closely,[35] and new identifications of other possible boundary sanctuaries, suggested by recent excavations in the territory of Rome, have also been taken into account.

To define the limits of the *ager Romanus antiquus*, Giovanni Colonna accepts the sanctuary of Dea Dia (Monte delle Piche, or Hill of the Magpie) and the sanctuary of Terminus (Acqua Acetosa Laurentina) on the south as definite boundary sanctuaries; on the east he accepts the Fossae Cluiliae (so-called Horatii and Curiatii's *tumuli* on the Via Appia); and on the right bank of the Tiber he takes into consideration the localisation of some sites with Etruscan material culture, which obviously have to be left out. In this sense the most relevant seem to be Colle S. Agata and Acquafredda.[36] In addition, the fortified Etruscan sites of Acquatraversa,[37] on the north-east of Colle Sant'Agata near the Acquatraversa Stream, and Monte delle Grotte, near the confluence of the Crescenza and Acquatraversa Rivers, could also be added to the list of boundary markers.[38] In particular, Giovanni Colonna suggests that the *ager Romanus antiquus* boundary is marked by Fosso dell'Acqua Acetosa in the south, Fosso della Magliana in the west and the Anio River in the north-east at least as far as Ponte Mammolo.[39]

The boundary proposed by Colonna can be further defined on the basis of new evidence from recent studies and excavations. In 2005, for example, Gabriele Cifani published details of a votive deposit found in a rescue excavation in 1971, which had remained unpublished until then.[40] The votive deposit included some material generally dated to proto-historic times, some pottery of the Archaic Age and Early Republican Period (sixth to fifth century BC) and more abundant pottery and material from the Middle (fourth to third century BC) and Late (second to first century BC) Republican Periods.[41] If this votive deposit is considered to be an indication of a cult place and is taken into consideration in the definition of the *ager Romanus antiquus* boundary, the resulting limit on the western side more closely resembles that in the reconstruction proposed by Stefania Quilici Gigli.[42]

Another votive deposit has recently been discovered at the sixth mile of the Via Nomentana in Fondi di Coazzo.[43] It has been suggested that this cult place could be the Lucus Robiginis sanctuary (the 'grove' of Robigus, the god of wheat rust or mildew, who protects crops from disease), mentioned by

Table 9. Correlation between slope and cost of moving

Slope (degree)	Constant	Seconds/25 m
0–3	1	19
4–11	1.5	28
12–15	1.75	33
16–25	2	38
26–30	3	56

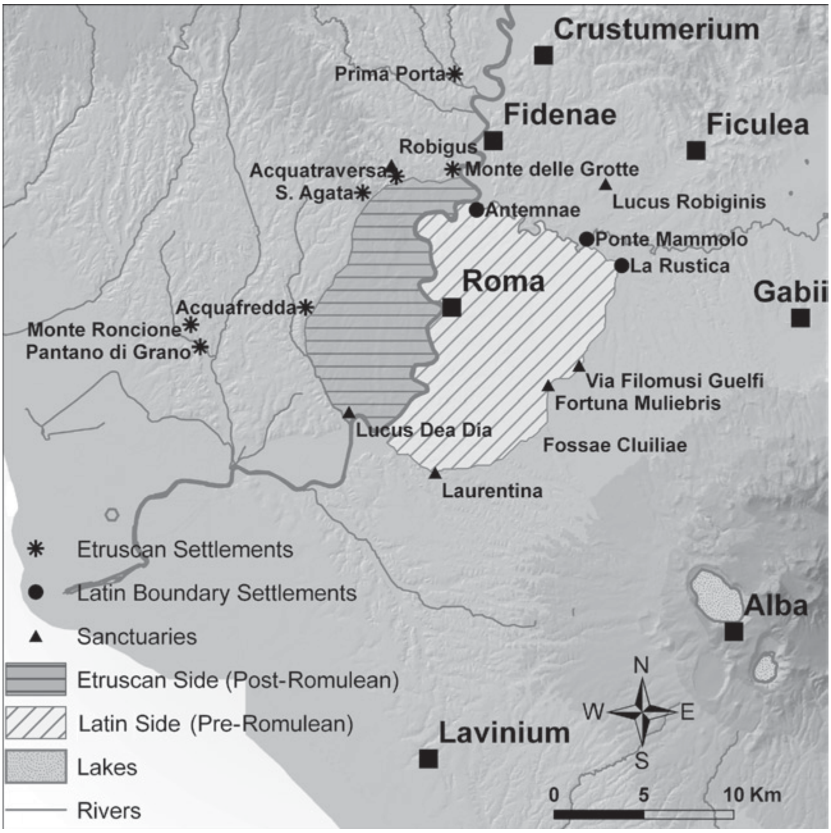
From Rajala 2002 after Machovina 1996.

Ovid (43 BC–17 AD) in his *Fasti*. In fact, while the *Fasti Praenestini*[44] state that the Robigus sanctuary was placed at the fifth mile of the Via Clodia,[45] Ovid tells us that, while walking back from Nomentum to Rome, he met a crowd of people wearing white clothes who accompanied the *flamen* (priest) to the Robigus grove (namely, during the Robigalia procession).[46] Therefore, it seems plausible that the 'Lucus Robiginis' mentioned by Ovid and located on the Via Nomentana is different from the 'Robigus' sanctuary, which appears in the *Fasti Praenestini* and is located on the Via Clodia, and could possibly be identified with the votive deposit, archaeologically attested in the area of Fondi di Coazzo.[47]

In order to model the route between the sanctuaries associated with the fifth–sixth mile boundary, the 'shortest path' function of Spatial Analyst in ArcGIS 9 was used. While it should be noted that ritual behaviour does not necessarily follow the 'shortest path',[48] it seemed a reasonable first step to model the most efficient natural route for a person to walk, in order to reconstruct topographically the ritual procession connecting the sanctuaries. To take into consideration the cost of travelling on the ground, it is possible to calculate the 'shortest path' on a raster 'cost-surface map', which can simulate human walking in all directions.[49]

Van Leusen provided a good review of the factors and criteria used by different authors to calculate cost-surface maps, but the most common has been and continues to be slope.[50] The present work used an isotropic (equal in all directions) cost surface which was derived from slope and based on an empirical calculation of the effort necessary to walk uphill according to the model adopted by Ulla Rajala in her doctoral dissertation.[51] The correlation between slope and cost of moving that Rajala used was based on an unpublished study of Machovina[52] and is shown in Table 9.

Slopes of more than 30 degrees were considered impassable. The slope was derived from a digital elevation model with a resolution of 20 metres obtained from the Italian Ministero dell'Ambiente (Environment National Council). On the basis of previous studies combined with the new evidence


Crustumerium
Prima Porta
Fidenae
Ficulea
Robigus
Acquatraversa
S. Agata
Monte delle Grotte
Lucus Robiginis
Antemnae
Ponte Mammolo
La Rustica
Roma
Gabii
Acquafredda
Monte Roncione
Pantano di Grano
Via Filomusi Guelfi
Fortuna Muliebris
Lucus Dea Dia
Fossae Cluiliae
Laurentina
Etruscan Settlements
Latin Boundary Settlements
Sanctuaries
Etruscan Side (Post-Romulean)
Latin Side (Pre-Romulean)
Lakes
Rivers
Alba
N
W
E
S
Lavinium
0
5
10 Km

32. The *ager Romanus antiquus* according to literary sources with sanctuaries and relevant Etruscan and Latin settlements from the 8th to the 6th–5th centuries BC.

presented earlier in this chapter, the graphical reconstruction presented in Figure 32 was obtained. The area defined by this limit is about 19,100 ha (or 191 km^2), 11,820 ha of which are on the Latin side of the Tiber and 7,280 ha on the Etruscan side.[53]

Dating of the Fifth–Sixth Mile Boundary

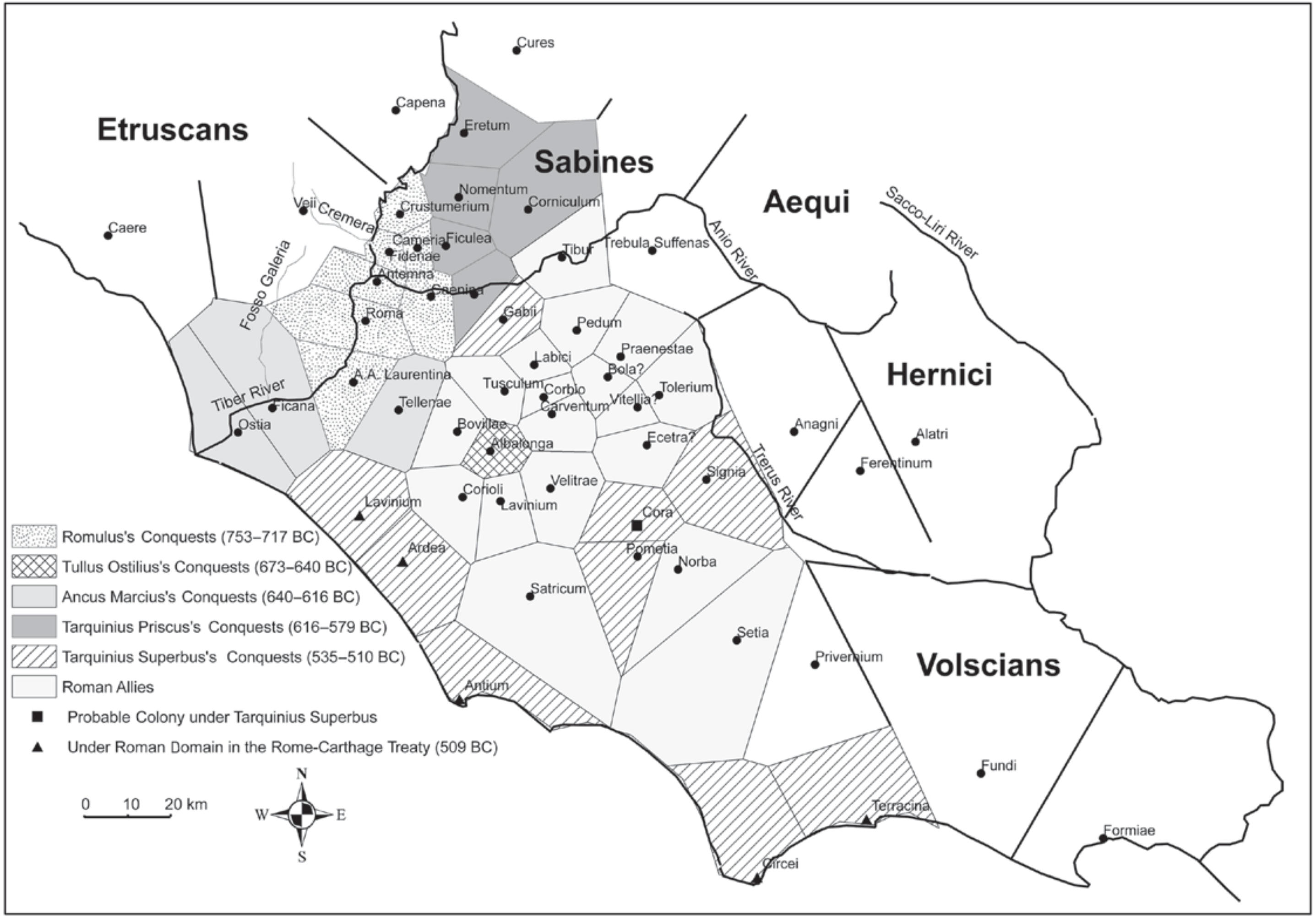
Historians have traditionally linked the *ager Romanus antiquus* with the area included in the Roman territory under the kings, while simultaneously questioning the annalistic tradition concerning early Rome and its expansion in Latium. In general it could be said that 'sceptical' historians, such as Andreas Alföldy,[54] followed by John Scheid,[55] date the *ager Romanus antiquus* to the sixth to fifth century BC, and they concur with the opinion of Albert Niebuhr, who strongly considered the conquests by the kings to have been invented and to be regarded with great suspicion.[56]

By contrast, 'moderate' historians and archaeologists are more inclined to date the *ager Romanus antiquus* to the beginning of the monarchy or even earlier because they accept the expansion of Rome under the kings: Arnaldo Momigliano[57] and Stefania Quilici Gigli[58] date the *ager Romanus antiquus* to the age of Numa Pompilius, the second king of Rome (ca. 715–672 BC), while Giuseppe Lugli[59] and Carmine Ampolo[60] date it to the time of Romulus (according the tradition, ca. 753–715 BC). Rudi Thomsen also dates the *ager Romanus antiquus* to a long time before the fall of the monarchy: 'On the whole, it undoubtedly represents the original territory of the city-state of Rome, as was already realised by Beloch'.[61]

In fact, if the tradition of the expansion of Rome under the kings is accepted, Tullus Hostilius (ca. 672–640 BC) conquered Alba Longa, Ancus Marcius (ca. 640–616 BC) extended the Roman territory down to Ostia and Tarquinius Priscus (ca. 616–578 BC) conquered the sites to the north of Rome up to Corniculum and Eretum. In the end, the territory controlled by Rome (directly or by alliance) under Tarquinius Superbus (534–509 BC) most likely extended down to Circei and Terracina.[62] It has been observed that this progression of Roman conquests during the Regal Period, as indicated by historical accounts, shows an amazing degree of territorial coherence and strategic development, which might suggest its historical reliability (Fig. 33).[63] On the other hand, while it might be tempting to see the narrative of early engagement with, and eventual conquest of, neighbouring sites as an example of how Rome's territory expanded, the internal coherence of the historical accounts could also indicate a later, rationalised and artificial reconstruction.[64]

However, this argument is not based solely on ancient written works; it is also supported by copious archaeological evidence. In fact, a number of scholars have observed that the aggressive and hegemonic territorial polity of Rome under the kings, attributed in literary accounts to demographic pressure, could be mirrored in the material culture, as demonstrated by the leadership role assumed by the city in the redistribution to Latin cities of cultural factors (such as decorative features of sacred architecture) originally derived from Etruria and/or Greece. For instance, as noted by Filippo Coarelli[65] and Fausto Zevi[66] and systematically investigated by Ingrid Edlund-Berry,[67] Etruscan round moulding decorations, first attested in Rome during the sixth century BC in the S. Omobono sanctuary, seem not to appear in Latin temples randomly. On the contrary, the diffusion in Latium of a common and well-defined architectural language, formerly developed in Rome, seems to be instrumental in the imposition of its hegemony in the region both culturally and politically.[68]

If this line of thought is correct, as already mentioned, the land controlled by Rome (directly or by alliance) under Tarquinius Superbus probably extended down to Circei and Terracina[69] (Fig. 33), and therefore the *ager Romanus antiquus* at the fifth–sixth mile boundary must have delimited the territory of


Etruscans
Sabines
Aequi
Hernici
Volscians
Cures
Capena
Eretum
Nomentum
Corniculum
Veii
Cremera
Crustumerium
Cameria
Ficulea
Fidenae
Antemna
Caenina
Caere
Fosso Galeria
Roma
Tibur
Trebula Suffenas
Anio River
Sacco-Liri River
Gabii
Pedum
Praenestae
Labici
Bola?
Tolerium
Tusculum
Corbio
Carventum
Vitellia?
A.A. Laurentina
Tellenae
Tiber River
Ficana
Ostia
Bovillae
Albalonga
Ecetra?
Anagni
Alatri
Ferentinum
Signia
Trerus River
Velitrae
Corioli
Lavinium
Lavinium
Cora
Pometia
Norba
Ardea
Satricum
Setia
Privernium
Antium
Fundi
Terracina
Formiae
Circei
Romulus's Conquests (753–717 BC)
Tullus Ostilius's Conquests (673–640 BC)
Ancus Marcius's Conquests (640–616 BC)
Tarquinius Priscus's Conquests (616–579 BC)
Tarquinius Superbus's Conquests (535–510 BC)
Roman Allies
Probable Colony under Tarquinius Superbus
Under Roman Domain in the Rome-Carthage Treaty (509 BC)
0 10 20 km
N
W
E
S

33. The expansion of Rome under the kings, from the mid-8th to the end of the 6th century BC, according to literary accounts.

Rome in more ancient times.[70] Giovanni Colonna and Andrea Carandini go even farther: they are both inclined to connect the *ager Romanus antiquus* with the very beginning of Rome, suggesting it belongs to the first large, unified settlement of Rome on the so-called seven hills, which is attested archaeologically by the cessation of the central funerary areas (Fora and the Temple of Antoninus and Faustina) and the beginning of the Esquiline and Quirinal cemeteries in Latial Phase IIB/IIIA, during the ninth century BC, or possibly even earlier.[71]

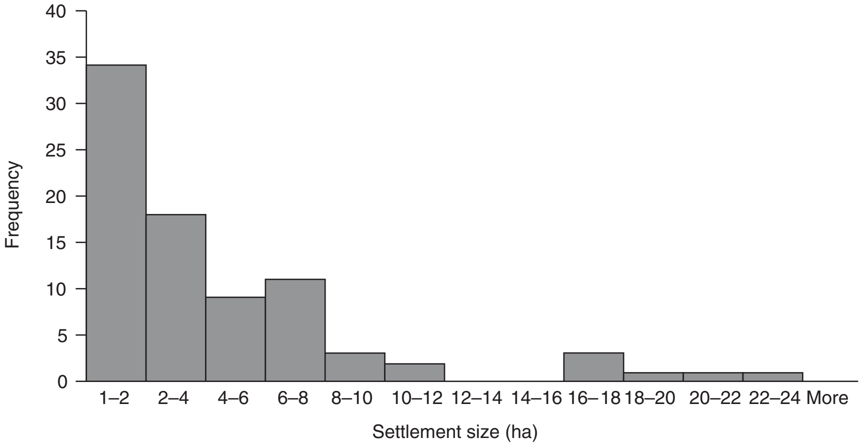
In the following sections, this reconsideration of the *ager Romanus antiquus*, based on literary accounts combined with archaeological evidence, will be compared with a number of reconstructions of the territory of Rome during the earliest phases of its history, obtained independently from textual accounts and based on the archaeological evidence. In particular, a few theoretical tools, such as Thiessen polygons and visibility analyses, and the calculation of land requirements for a sustainable system to feed the population of the city and its hinterland in different times from the Bronze to the Archaic Age (land carrying capability), will be applied.

4.3 THE *AGER ROMANUS ANTIQUUS*: THEORETICAL APPROACH

Thiessen Polygons

Thiessen polygons (or planar Voronoi diagrams) were first used by the U.S. Weather Bureau to assign rainfall levels to areas around rainfall collection points.[72] The method was adopted from geography by archaeologists in the early 1970s and has since been used in many cultural contexts.[73] With particular reference to middle Tyrrhenian Italy, it has been applied by Renfrew[74] and di Gennaro[75] to Etruria and by Bietti Sestieri,[76] Pini and Seripa,[77] Bouma and van't Lindenhout[78] and, more recently, Amoroso and Barbina[79] and Capanna[80] to Latium vetus. The method of constructing Thiessen polygons is very simple: different centres are joined by a line, and then the midpoints of these lines are further joined to form a boundary line, thus creating a series of polygons.[81]

The problem with the Thiessen polygon method is that it is based on two assumptions: the area defined by a polygon is constituted by all the points which are closer to the enclosed centre than any other centre; and the enclosed centre dominates all the area that lies geometrically nearest to it.[82] That means that the model does not take into account the concept of hierarchy or political dominance expressed by territoriality.[83] To avoid this problem settlements are distinguished in different hierarchical levels according to size.[84] For the Bronze Age, settlements larger than 6 ha are considered first-order centres, while for the Early Iron Age, settlements larger than 20–25 ha are considered first-order centres.

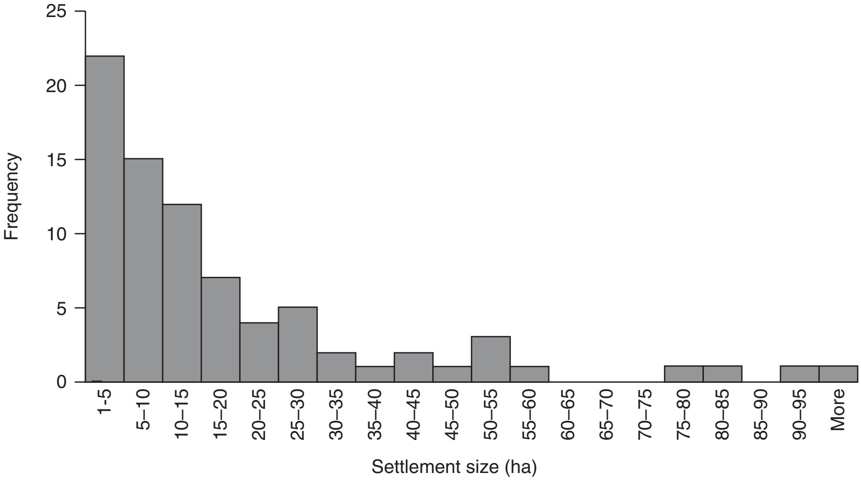


34. Latium vetus: settlement size-frequency histogram, Final Bronze Age 3.

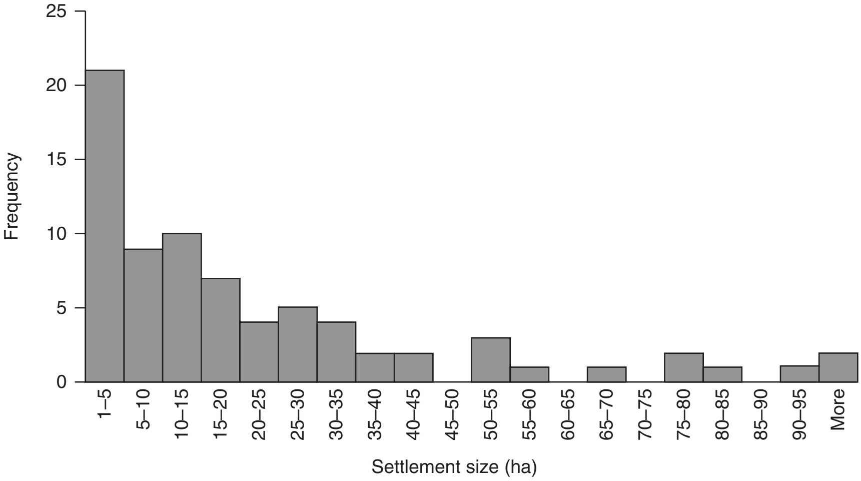
These thresholds were established by calculating settlement size versus frequency.[85] For all phases of the Bronze Age, the analysis showed a clear discontinuity in the extent of settlements between sites larger than 4–6 ha and those smaller than this size (as an example, Fig. 34 shows the size-frequency histogram for Latin settlements dated to the Final Bronze Age 3).[86] Therefore, settlements larger than this size are considered 'primary', and settlements smaller than this size are considered 'secondary'. However, it should be understand that a certain degree of settlement 'hierarchy' is suggested by several indices but has not yet been conclusively demonstrated, and therefore the terms 'primary' and 'secondary' are often enclosed in quotation marks.[87]

Settlement size versus frequency was also calculated for the Early Iron Age, as well as the Orientalizing and Archaic Ages, and the results of these calculations for the Early Iron Age 2 and the Archaic Age are shown in Figures 35 and 36 as examples. In particular, from the Early Iron Age until the Archaic Age, significant settlement size thresholds seem to be about 100 ha, 75–80 ha, 50–55 ha and then more clearly about 20–25 ha.[88] As a matter of fact, apart from a few exceptions and apparent anomalies, a quick and non-systematic review seems to suggest that settlements generally considered Latin cities by ancient literary sources[89] (and subsequently by modern scholars) extend to more than 20–25 ha, while supposedly secondary settlements appear to be less than 20 ha.

Exceptions to this rule (or, more correctly, this working hypothesis, which should be verified by a wider sample and more systematic scrutiny) seem to be, for example, Tellenae, Nomentum, Montecelio-Corniculum, Antium, Lanuvium, Poli-Bola, Tusculum and Ariccia, which are generally considered 'cities' but whose extent is calculated to be less than 20–25 ha. It must be said that the measurement for Antium is uncertain and that all of the other examples, apart from Nomentum and Montecelio-Corniculum, are settlements located in the area of the Alban Hills, where it is generally recognised



35. Latium vetus: settlement size-frequency histogram, Early Iron Age 2.



36. Latium vetus: settlement size-frequency histogram, Archaic Age.

that the processes of centralisation and urbanisation occur a bit later and on a smaller scale.[90]

Among 'secondary' settlements, Corcolle (or Colle S. Angeletto, possibly to be identified with Pedum)[91], Lunghezza-Collatia, Monte Cugno-Ficana, sito dell'EUR and Ponte Mammolo are larger than the expected 20–25 ha. However, as shown by the application of multiplicative weighted Voronoi diagrams, which model territorial spheres of influence in relation to settlement size and distance among nearest neighbours, all of them are dependent on very large first-order settlements, such as Gabii for Corcolle and Lunghezza-Collatia, and Rome for Monte Cugno-Ficana, sito dell'EUR and Ponte Mammolo (see Section 6.5, esp. Figs. 128 and 129).

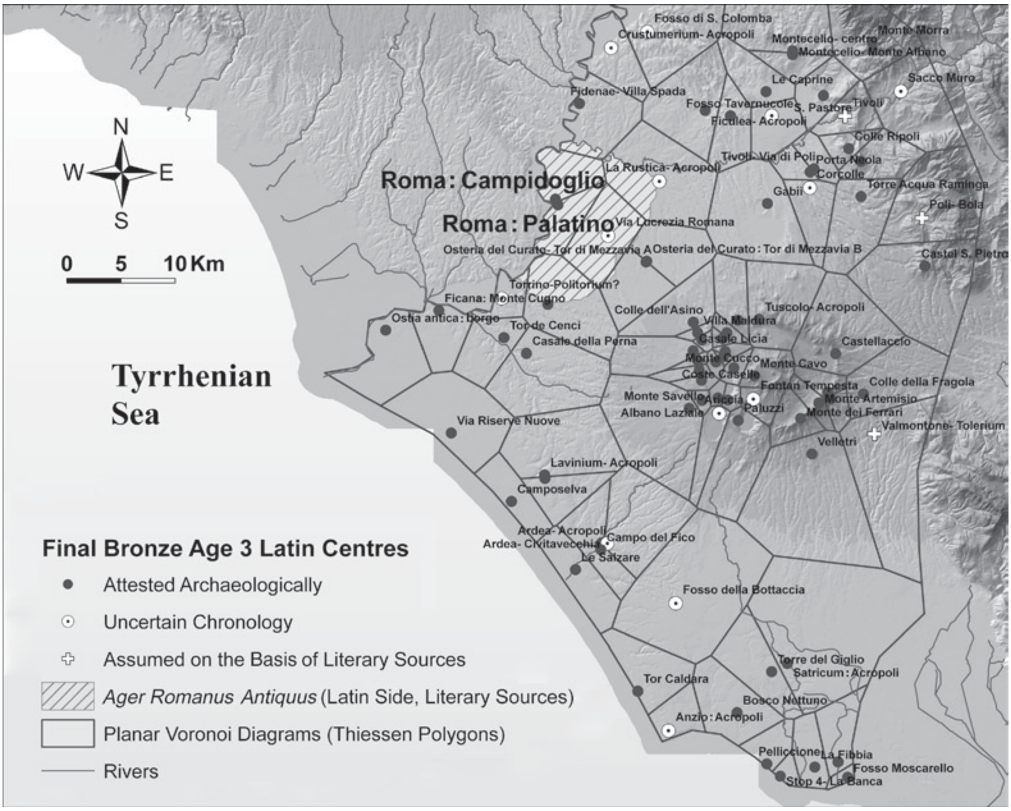
The existence of a settlement hierarchy is commonly accepted for Latium vetus in the Early Iron Age, when it seems plausible that small settlements (less than 20–25 ha) are dependent on nucleated proto-urban settlements, which themselves vary in size from small (20–25 to 50–55 ha) to medium (50–55 to 75–80 ha) to very large (more than 100 ha).[92] The validity of this assumption has also been confirmed by the calculation of settlement size versus frequency (see Fig. 35) and by the application of multiplicative weighted Voronoi diagrams (see Section 6.5).

As will be shown in Section 6.5, according to the territorial dynamics predicted by this model, at least from the advanced Early Iron Age 1, Latin settlements larger than 20–25 ha dominate smaller settlements according to clear and organised spheres of influence, with Rome dominating the region (see Figs. 127–30). For the Bronze Age, by contrast, the socio-political organisation of Latin communities, their territorial organisation and the possible existence of settlement hierarchy are still widely debated topics.

According to Bietti Sestieri, Bronze and Early Iron Age Latin communities were consolidated into a few large tribal communities in districts corresponding to the territory of the later cities of the Archaic Age.[93] By contrast, Carandini proposes that it is possible to identify, at least for the final part of the Bronze Age and the beginning of the Early Iron Age (end of the eleventh and beginning of the tenth century BC), several communities were organised in a complex chiefdom, corresponding to the thirty Populi Albenses, who were part of a religious league and had regular communal ritual meals on the Alban Hills (Monte Cavo), as mentioned by Pliny (23–79 AD).[94]

In the following paragraphs, settlement hierarchy in Latium vetus (which will be further explored in Chapter 6) will be discussed in relation to the application of Thiessen polygons to define the extent of the territory of Rome and to date the *ager Romanus antiquus*. The concepts of 'monocentric' and 'polycentric' communities, elaborated by Francesco di Gennaro for pre-historic communities of southern Etruria,[95] will be applied to Latium vetus settlements. This will shed new light on both the problem of determining the limits of the *ager Romanus antiquus* and the political organisation of Late Bronze Age Latin communities.

If Bronze Age Latin settlements are considered politically equal, regardless of the differences in their size, then the *Ager Romanus antiquus* boundary, as defined by literary sources, covers an area larger than predicted by Thiessen polygons for the territory of Rome (Fig. 37), whereas if Thiessen polygons are constructed around Bronze Age settlements larger than 6 ha, the territory predicted for the Roman centre is more or less equal to that of the *ager Romanus antiquus* by the Final Bronze Age and possibly even earlier (Fig. 38). According to di Gennaro 'monocentric' communities are organised into territorial districts gravitating around a single settlement, while 'polycentric' communities

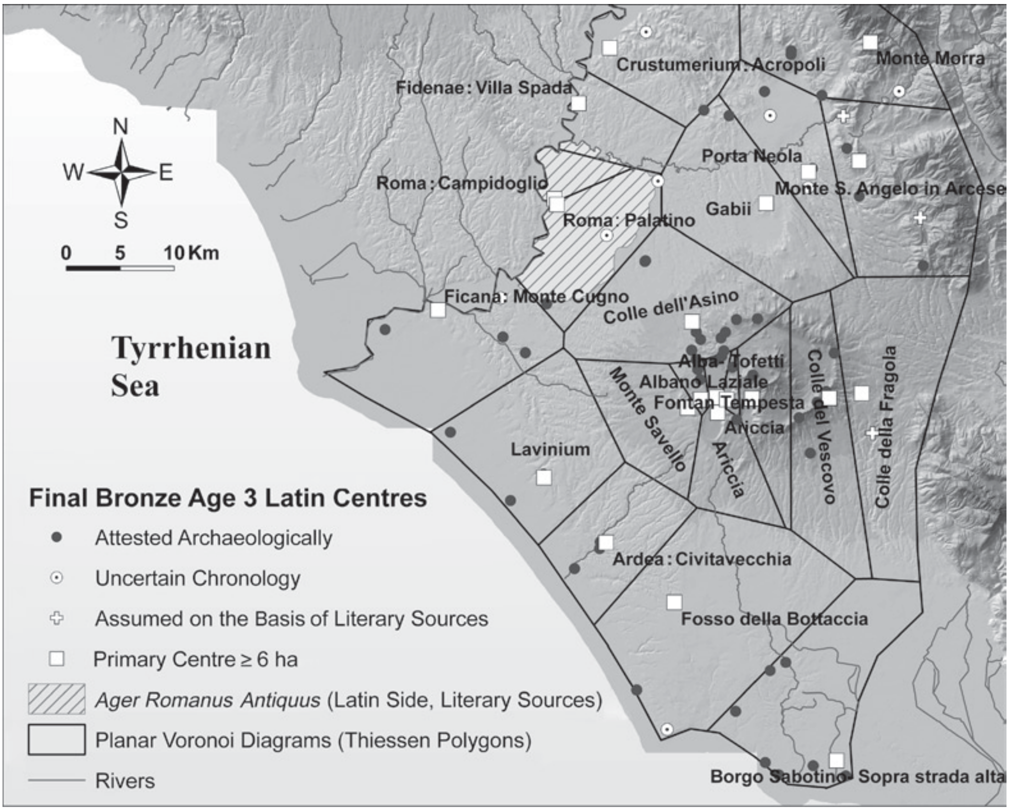

Fosso di S. Colomba
Crustumerium- Acropoli
Montecelio- centro
Monte Morra
Montecelio- Monte Albano
Le Caprine
Sacco Muro
Fidenae- Villa Spada
Fosso Tavernucole
S. Pastore
Tivoli
Ficulea- Acropoli
Colle Ripoli
Tivoli- Via di Poli
Porta Neola
Corcolle
La Rustica- Acropoli
Roma : Campidoglio
Gabii
Torre Acqua Raminga
Poli- Bola
Roma : Palatino
Via Lucrezia Romana
Osteria del Curato- Tor di Mezzavia A
Osteria del Curato : Tor di Mezzavia B
Castel S. Pietro
Torrino-Politorium?
Ficana: Monte Cugno
Colle dell'Asino
Tuscolo- Acropoli
Ostia antica : borgo
Villa Maldura
Tor de Cenci
Casale Licia
Casale della Perna
Castellaccio
Monte Cucco
Monte Cavo
Coste Caselle
Fontan Tempesta
Colle della Fragola
Monte Savello
Ariccia
Monte Artemisio
Albano Laziale
Paluzzi
Monte dei Ferrari
Valmontone- Tolerium
Via Riserve Nuove
Velletri
Lavinium- Acropoli
Camposelva
Ardea- Acropoli
Campo del Fico
Ardea- Civitavecchia
Le Salzare
Fosso della Bottaccia
Torre del Giglio
Satricum : Acropoli
Tor Caldara
Bosco Nettuno
Anzio : Acropoli
Pelliccione
La Fibbia
Fosso Moscarello
Stop 4- La Banca
N
W
E
S
0 5 10 Km
Tyrrhenian Sea
Final Bronze Age 3 Latin Centres
● Attested Archaeologically
⊙ Uncertain Chronology
✣ Assumed on the Basis of Literary Sources
▨ *Ager Romanus Antiquus* (Latin Side, Literary Sources)
☐ Planar Voronoi Diagrams (Thiessen Polygons)
— Rivers

37. Latium vetus: settlement territorial districts according to Thiessen polygons with all centres considered of equal rank, Final Bronze Age 3.

imply the existence of more settlements within the same territory, with one settlement acting as the 'hegemonic' or 'central' point for other dependent (possibly specialised) settlements.[96]

While an authentic hierarchical organisation is generally applied only to the Early Iron Age (when a new ranked 'monocentric' model is in place, with large proto-urban centres acting as central places for dependent settlements located within the limits of their territories, for which see Chapter 6), di Gennaro detected in southern Etruria during the advanced Middle Bronze Age a 'polycentric' organisation with an embryonic differentiation between 'major' or 'primary' settlements, which acted in some way as 'central nodes', and 'secondary' settlements gravitating around them and relying on them for 'central' services.[97]

As previously stated, the terms 'primary' and 'secondary' are enclosed in quotation marks because at this stage there is no official settlement hierarchy, and the primary centre does not qualify as a mature central market (as it will do later in the Early Iron Age), but settlements are probably differentiated by various forms of specialisation (even though this is not demonstrable


Crustumerium: Acropoli
Monte Morra
Fidenae: Villa Spada
N
W
E
S
0 5 10 Km
Porta Neola
Roma: Campidoglio
Monte S. Angelo in Arcese
Gabii
Roma: Palatino
Ficana: Monte Cugno
Colle dell'Asino
Tyrrhenian Sea
Alba-Tofetti
Albano Laziale
Fontan Tempesta
Ariccia
Monte Savello
Ariccia
Colle del Vescovo
Colle della Fragola
Lavinium
Final Bronze Age 3 Latin Centres
● Attested Archaeologically
⊙ Uncertain Chronology
✣ Assumed on the Basis of Literary Sources
☐ Primary Centre ≥ 6 ha
▨ Ager Romanus Antiquus (Latin Side, Literary Sources)
☐ Planar Voronoi Diagrams (Thiessen Polygons)
— Rivers
Ardea: Civitavecchia
Fosso della Bottaccia
Borgo Sabotino
Sopra strada alta

38. Latium vetus: settlement territorial districts according to Thiessen polygons with centres larger than 6 ha considered 'primary' and the others 'secondary', Final Bronze Age 3.

archaeologically). Communities belonging to the same 'polycentric' unit probably 'shared' and 'protected' a certain territory to which they felt they belonged. However, it is unlikely that the 'primary' or 'hegemonic' settlement of that district already fully controlled the whole of the district territory in a centralised or 'political' way.[98]

For this interpretation two applications of Thiessen polygons might be relevant, though they refer to two different levels of political organisation. The first application, with 'equal' Thiessen polygons, refers to the territory directly controlled by each settlement, while the second application, with Thiessen polygons constructed according to the settlement size hierarchy, might refer to the territory shared by the same 'polycentric' community.

It is likely that the tradition of the Populi Albenses reflects a political organisation similar to the one represented by di Gennaro's 'polycentric' communities, although this is difficult to demonstrate. In fact, there might be biases both in the traditional lists of the Populi from the literary accounts and in the archaeological survival of their 'hegemonic' sites.[99]

Carrying Capacity: Demography and Territory

The second approach to the definition of the territory of Rome is based on the estimation of the population of Rome at different times and the calculation of the hypothetical size of the territory necessary to feed such a population. This method was applied by Rajala in her doctoral dissertation, and the present work is indebted to her for this methodology.[100] The urban population of Rome was calculated by multiplying its area by a density constant and then by an average house size. The demographic calculations are obviously based on a number of assumptions and have to be considered possible scenarios, which might vary slightly if different assumptions are made.

Rajala calculated the density constant in three to four households per hectare from the excavation of Early Iron Age huts in Latium Vetus (Fidenae, Rome: Palatine), Sabina (Cures) and Etruria (Tarquinia: Calvario di Monterozzi), and she derived an average house size of 5.67 persons per unit from a detailed study of a Neolithic community.[101] Thus, for Gabii during the Bronze Age and the Early Iron Age, she suggests a density of about 18/20 inhabitants per hectare,[102] while she finds a density of 120 inhabitants per hectare for the Archaic Age.[103]

From palaeo-botanical data, our knowledge of the Roman diet and the modern Mediterranean diet, Rajala reconstructed past central Italian diets;[104] she then established the consumption relationship between different hierarchies or demographies and finally calculated the area of arable land necessary to meet the demands of different population sizes in different periods.[105] Following Rajala's calculations on the site of Gabii,[106] the present study calculated the population of the city through time, along with the total agricultural land and the hypothetical territorial radius needed to feed this population. The calculation was based on an average density of 120 inhabitants per hectare for the Archaic Age but a mean value of 5 for the number of individuals per household during earlier phases[107] as well as the values for the extent of Rome given in the preceding chapter (Table 10).

According to this calculation, the area corresponding to the Latin side of the *ager Romanus antiquus* (about 11,820 ha) would have been suitable to feed the population of Rome since the creation of a large unified centre (attested archaeologically by the cessation of formal adults burials in the central funerary areas of the Fora and the Temple of Antoninus and Faustina and the beginning of burials on the Quirinal and Esquiline Hills) between the end of Latial Sub-Phase IIB2 and the beginning of Latial Phase IIIA (middle to the end of the ninth century BC) until the Orientalizing Age (mid-eighth to seventh century BC), while it would have been clearly insufficient during the Archaic Age (sixth century BC). However, as suggested by John Bintliff, unless one assumes that the entire *ager* was farmed

Table 10. Total area required to feed the hypothetical population of Rome in different periods based on Rajala's calculations performed on the site of Gabii

Period	Final Bronze Age	Early Iron Age 1 Early		Early Iron Age 1Late	Early Iron Age 2/Early Orientalizing Age		Archaic Age
Settlement	Capitoline Hill, Palatine Hill	Capitoline/Quirinal Hills, Palatine Hill/Cermalus/ Velia/Fagutal? (min & max)		Enlarged settlement attested by the Qurinal & Esquiline cemeteries	Rome under the 'kings' (min & max)		'Servian' Wall limit
Area (ha)	37 (14 + 23)	91 (54 + 37)	114 (54 + 60)	202	210	275	426
Population	616	1,515	1,898	3,363	3,497	4,579	51,120
Product (ha)							
Grain	130	327	409	725	758	992	12,091
Fallow	130	327	409	725	758	992	12,091
Pulses	7	16	20	36	37	49	577
Pasture	1,214	2,502	3,135	5,554	5,432	7,113	34,152
Hay	276	568	711	1,260	1,201	1,572	7,316
Fodder cereals	123	253	317	562	585	766	3,934
Olive oil					33	43	1,113
Wine					70	92	10,148
Total food needs (ha)	1,880	3,993	5,002	8,863	8,872	11,619	81,423

See Rajala 2002.

by urban residents, it has to be assumed that rural residents shared in the production, with their surplus products being available to the main settlement. If the necessary satellite settlements and their food needs are taken into account, the catchment territorial radius of a primary settlement has to be increased by one-third.[108]

Upon recalculation of Rajala's figures according to Bintliff's suggestion (shown in Table 11), it can be seen that the Latin side of the *ager Romanus antiquus* would have been sufficient to sustain only the population of Rome and its hinterland during an early phase of the Early Iron Age, before the dramatic enlargement of the settlement, attested archaeologically by the abandonment of the central burial areas around the Forum Romanum in favour of the more distant Esquiline and Quirinal cemeteries (Latial Phase IIB/IIIA, i.e., by the middle/late ninth century BC or possibly somewhat earlier). In both cases, this reconstruction is consistent with the hypothesis of an early dating of the *ager Romanus antiquus*, at least before the Archaic Age, and possibly as early as an advanced phase of the Early Iron Age.[109] If the model presented by Bintliff in his paper on early Mediterranean urbanism[110] is applied to the same estimations of the size of Rome used here, the *ager Romanus antiquus* would have been suitable to feed only the hypothetical population of Rome at a very early stage.

If one assumes a population density of between 120 and 300 inhabitants per hectare and a sustaining area of 9 ha for a family of five people during the Bronze Age and of 3.6 ha during the Early Iron Age, the figures presented in Table 12 are obtained. Bintliff's model is based on the hypothesis of a diet based mainly on grain and vegetables, three crops at a time, and assumes a small amount of farm-based stock for the Early Iron Age and a lower level of technology and general agro-pastoral productivity for the Bronze Age.[111] As shown in Table 12, even assuming the lowest population density estimation (120 inhabitants per hectare) to calculate the probable population of Rome, and assuming the area calculations discussed in the preceding chapter, Bintliff's model would predict that the Latin side of the *ager Romanus antiquus*, reconstructed on the basis of literary accounts, would have been nearly enough to feed the urban and rural populations of the settlement during the Final Bronze Age (the twelfth to eleventh and beginning of the tenth century BC) and the very beginning of the Early Iron Age (Latial Phase IIA, second half of the tenth century BC).

After the beginning of the Early Iron Age (middle of the tenth century BC), an area equivalent to the whole *ager Romanus antiquus* (19,100 ha), including the Etruscan side, would have been necessary. Later on, with the dramatic enlargement of the settlement already mentioned (Latial Phase IIB/

Table 11. Total area required to feed the hypothetical population of Rome in different periods based on Rajala's calculations performed on the site of Gabii and Bintliff's idea of taking the rural population into account

Period	Final Bronze Age	Early Iron Age I Early		Early Iron Age I Late	Early Iron Age 2/ Early Orientalizing Age		Archaic Age
Settlement	Capitoline Hill, Palatine Hill	Capitoline/Quirinal Hills, Palatine Hill/Cermalus/Velia/Fagutal? (min & max)		Enlarged settlement attested by the Qurinal & Esquiline cemeteries	Rome under the 'kings' (min & max)		'Servian' Wall limit
Area (ha)	37 (14 + 23)	91 (54 + 37)	114 (54 + 60)	202	210	275	426
Population	616	1,515	1,898	3,363	3,497	4,579	51,120
Food needs (ha)	1,880	3,993	5,002	8,863	8,872	11,619	81,423
Sustaining radius (km)	2	4	4	5	5	6	16
Sustaining radius + ⅓ (km)	3	5	5	7	7	8	21
Sustaining radius + ⅓ (area, ha)	3,342	7,098	8,892	15,757	15,773	20,655	144,752

See Rajala 2002; Bintliff 2002b.

Table 12. Total area required to feed the hypothetical population of Rome in different periods based on Bintliff's model

Period	Settlement	Area	Population[a]		Food needs (ha)		Sustaining radius (+ ⅓) (km)		Sustaining radius + ⅓ (ha)	
			Min	Max	Min	Max	Min	Max	Min	Max
Final Bronze Age	Capitoline Hill, Palatine Hill	37 (14 + 23)	4,440	11,100	7,992	18,980	5 (7)	8 (11)	14,208	35,520
Early Iron Age 1 Early	Capitoline/Quirinal Hills, Palatine Hill/Cermalus/ Velia/Fagutal? (min & max)	91 (54+37)	10,920	27,300	7,850	19,656	5 (7)	8 (11)	13,978	34,944
		114 (54 + 60)	13,680	34,200	9,850	24,625	6 (7)	9 (12)	17,510	43,776
Early Iron Age 1 Late	Enlarged settlement (Qurinal & Esquiline cemeteries)	202	24,240	60,600	17,453	43,632	7 (10)	12 (16)	31,027	77,568
Early Iron Age 2 / Early Orientalizing Age	Rome under the 'kings' (min & max)	210	25,200	63,000	18,144	45,360	8 (10)	12 (16)	32,256	80,640
		275	33,000	82,500	23,760	59,400	9 (12)	14 (18)	42,240	105,600
Archaic Age	Rome within the 'Servian' Wall	426	51,120	127,800	36,806	92,016	11 (14)	17 (23)	65,434	163,584

[a] Population figures are based on a minimum of 120 and a maximum of 300 inhabitants per hectare.
See Bintliff 2002b.

IIIA, i.e., ninth century BC or possibly somewhat earlier), even this area would not have be sufficient. If Bintliff's model is modified by using lower population density figures, which were calculated by Andrea Cardarelli for Middle and Late Bronze Age Terremare settlements in northern Italy,[112] the figures presented in Table 13 are obtained. This results in the *ager Romanus antiquus* (Latin side) achieving a sustainable territory at a very early stage of the settlement, that is, at least by the Final Bronze Age (from the twelfth to the first half of the tenth century BC). This territory would have been sustainable until the formation of the enlarged settlement of Rome, which, as previously discussed, is archaeologically visible on the basis of funerary evidence by the Latial Phase IIB/IIIA (about the ninth century BC) or possibly even earlier.[113] After that a gradually increasing territory would have been necessary.

Cristiano Viglietti has suggested that the tradition related to the Romulean *bina iugera*[114] might be reliable. He reassessed the ancient sources and the existing literature from an anthropological point of view and demonstrated that actually 2 *iugera* (0.5 ha) were enough in Archaic times, and possibly in the Orientalizing and Early Iron Ages,[115] to sustain a family of three people (two adults and one young child).[116] If Viglietti's hypothesis on land productivity for early Rome is accepted and Bintliff's and Cardarelli's demographic figures are used, the calculations presented in Tables 14 and 15 are obtained.

In these calculations a family of five (two adults, two young children and one adult child) is assumed; according to the literary sources, such a family would have been assigned a plot of arable land of 2 *iugera* for each adult, for a total of 4 *iugera* (1 ha). As suggested by Carmine Ampolo, the ratio of arable land to total land necessary to feed a population is 2:7.[117] Therefore, the land necessary to sustain an early Roman family of five people on the basis of Viglietti's assumption would be 3.5 ha, which is very similar to 3.6 ha assumed by Bintliff's model (presented earlier).

According to these calculations, even if one adopts the minimum population density estimation figures by Bintliff and Cardarelli – respectively 85 and 120 inhabitants per hectare – it appears that again the *ager Romanus antiquus* (Latin side) would have been sufficient to feed the population of Rome only at an early stage of the Early Iron Age 1, that is, before the time of the first enlarged settlement of Rome (or the second Septimontium, according to Carandini, about the middle to late ninth century BC or slightly earlier). By this time a territory equivalent to all of the *ager Romanus antiquus* would have been necessary. This date, suggested by both Bintliff's and Viglietti's models combined with Cardarelli's demographic densities, seems to be consistent with the chronology suggested by Colonna, who dates the *ager Romanus antiquus* to Latial Phase IIB (about the first half of the ninth century BC) on the basis of

Table 13. Territorial radius and total area required to feed the hypothetical population of Rome in different periods based on Bintliff's model and Cardarelli's population density figures

Period	Settlement	Area	Population[a]		Food needs (ha)		Sustaining radius (+ ⅓) (km)		Sustaining radius + ⅓ (ha)	
			Min	Max	Min	Max	Min	Max	Min	Max
Final Bronze Age	Capitoline Hill, Palatine Hill	37 (14 + 23)	3,145	7,400	5,661	13,320	4 (6)	7 (9)	10,064	23,680
Early Iron Age 1 Early	Capitoline/Quirinal Hills, Palatine Hill/Cermalus/ Velia/ Fagutal? (min & max)	91 (54+37) 114 (54 + 60)	7,735 9,690	18,200 22,800	5,569 6,977	13,104 16,416	4 (6) 5 (6)	6 (9) 7 (10)	9,901 12,403	23,296 29,184
Early Iron Age 1Late	Enlarged settlement (Qurinal & Esquiline cemeteries)	202	17,170	40,400	12,362	29,088	6 (8)	10 (13)	21,978	51,712
Early Iron Age 2/Early Orientalizing Age	Rome under the 'kings' (min & max)	210 275	17,850 23,375	42,000 55,000	12,852 16,830	30,240 39,600	6 (9) 7 (10)	10 (13) 11 (15)	22,848 29,920	53,760 70,400
Archaic Age	Rome within the 'Servian' Wall	426	36,210	127,800	26,071	92,016	9 (12)	17 (23)	46,349	163,584

[a] Population figures are based on a minimum of 85 and maximum of 200 inhabitants per hectare for the Bronze Age and the Early Iron Age and a minimum of 120 and maximum of 300 inhabitants per hectare for the Archaic Age.
See Bintliff 2002b; Cardarelli 1997.

Table 14. Territorial radius and total area required to feed the hypothetical population of Rome in different periods based on Bintliff's model and Viglietti's land productivity assumptions

Period	Settlement	Area	Population[a]		Food needs (ha)		Sustaining radius (+ ⅓) (km)		Sustaining radius min + ⅓ (area, ha)	
			Min	Max	Min	Max	Min	Max	Min	Max
Early Iron Age 1 Early	Capitoline/Quirinal Hills, Palatine Hill/*Cermalus*/ Velia/Fagutal? (min & max)	91 114	10,920 13,680	27,300 34,200	7644 9576	19110 23940	4.9 (6.6) 5.5 (7.4)	7.8 (10.4) 8.7 (11.6)	13589 17024	33973 42560
Early Iron Age 1 Late	Enlarged settlement (Qurinal & Esquiline cemeteries)	202	24,240	60,600	16968	42420	7.4 (9.8)	11.6 (15.5)	30165	75413
Early Iron Age 2 = Early Orientalizing Age	Rome under the 'kings' (min & max)	210 275	25,200 33,000	63,000 82,500	17640 23100	44100 57750	7.5 (10.0) 8.6 (11.4)	11.9 (15.8) 13.6 (18.1)	31360 41067	78400 102667
Archaic Age	Rome within the 'Servian' Wall	426	51,120	127,800	35784	89460	10.7 (14.2)	16.9 (22.5)	63616	159040

[a] Population figures are based on a minimum of 120 and a maximum of 300 inhabitants per hectare.
See Bintliff 2002b;Viglietti 2011.

Table 15. Territorial radius and total area required to feed the hypothetical population of Rome in different periods based on Bintliff's model, Cardarelli's population density figures and Viglietti's land productivity assumptions

Period	Settlement	Area	Population[a]		Food needs (ha)		Sustaining radius (+ ⅓) (km)		Sustaining radius min + ⅓ (area, ha)	
			Min	Max	Min	Max	Min	Max	Min	Max
Early Iron Age 1 Early	Capitoline/Quirinal Hills, Palatine Hill/*Cermalus*/Velia/Fagutal? (min & max)	91 114	7,735 9,690	18,200 22,800	5415 6783	12740 15960	4.2 (5.5) 4.6 (6.2)	6.4 (8.5) 7.1 (9.5)	9626 12059	22649 28373
Early Iron Age 1 Late	Enlarged settlement (Qurinal and Esquiline cemeteries)	202	17,170	40,400	12019	28280	6.2 (8.2)	9.5 (12.7)	21367	50276
Early Iron Age 2 = Early Orientalizing Age	Rome under the 'kings' (min & max)	210 275	17,850 2,3375	42,000 55,000	12495 16363	29400 38500	6.3 (8.4) 7.2 (9.6)	9.7 (12.9) 11.1 (14.8)	22213 29089	52267 68444
Archaic Age	Rome within the 'Servian' Wall	426	51,120	127,800	35784	89460	10.7 (14.2)	16.9 (22.5)	63616	159040

[a] Population figures are based on a minimum of 85 and maximum of 200 inhabitants per hectare for the Bronze Age and the Early Iron Age and a minimum of 120 and a maximum of 300 inhabitants per hectare for the Archaic Age.

See Bintliff 2002b; Cardarelli 1997;Viglietti 2011.

the archaeological evidence (fortification walls) of the boundary settlement Acqua Acetosa Laurentina.[118]

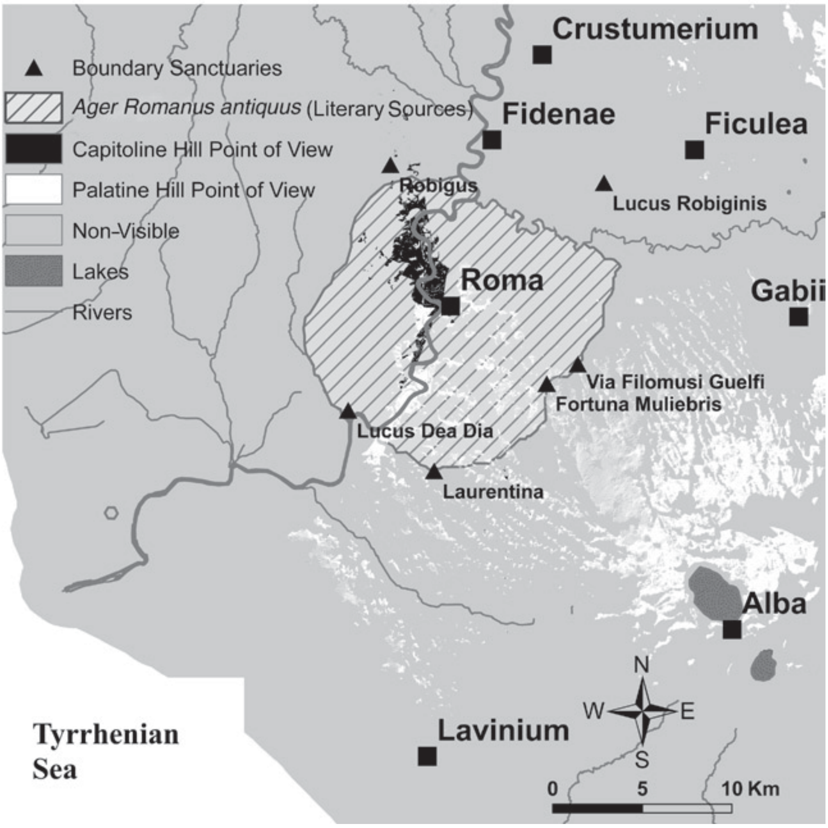
Most likely, soon after this time, and more definitively by the end of the Early Iron Age and the beginning of the Orientalizing Age (mid-eighth century BC),[119] this territory would have been unsustainable. This could possibly explain the predatory and hegemonic behaviour of Rome towards neighbouring communities, attested by archaeology at least from the Archaic Age and supposed for earlier times on the basis of traditional accounts.[120] In fact, after the dramatic enlargement of the settlement, attested by the shift of the funerary areas from the central locations around the Fora to the more peripheral positions on the Quirinal and Esquiline Hills, Rome reached an exceptional size, calculated to be about 200 ha.[121] This settlement dimension is unique in Latium vetus, where no other centre is larger than 80–90 ha. This unique size might explain why other Latin centres did not experience similar major demographic pressure.

Visible Area and Territorial Control

To explore the potential of the site of Rome in terms of territorial control, a visibility analysis (viewshed)[122] was applied. The highest points of the Palatine and Capitoline Hills were used as points of observation; a z factor (elevation above the ground) of 1.5 m was adopted to simulate the point of view of an observer; buildings of 10 and 20 m were also simulated, but apparently there was no significant difference in the outcome of the analysis. The results, however, were markedly different from what was expected.

Visibility from the Palatine Hill was directed towards the mountains rather than the valleys, and from the Capitoline Hill the focus seemed to be on the river, where there was a landing place and a ford and which became the core of the first settlement.[123] From the Palatine perspective, the river is still visible but there is a larger and wider visible area to the south-east of Rome, which (potentially by chance) corresponds exactly to the area of most of the sanctuaries of the *ager Romanus antiquus*, and to the south-west towards the Alban Hills (Fig. 39).

This result suggests that the highest point of the Palatine Hill provides a favourable point for observing the land to the south of Rome, that is, the Latin bank of the Tiber, and from this location the territory of the *ager Romanus antiquus* and its sanctuaries seems to be more visible. It might be just by coincidence, but the Palatine was the place chosen by the traditional figure of Romulus to found the city and to undertake his second *auspicia* (a divination ceremony based upon bird signs) in order to determine whether the gods were amenable to the enterprise.[124]


Boundary Sanctuaries
Ager Romanus antiquus (Literary Sources)
Capitoline Hill Point of View
Palatine Hill Point of View
Non-Visible
Lakes
Rivers
Crustumerium
Fidenae
Ficulea
Robigus
Lucus Robiginis
Roma
Gabii
Via Filomusi Guelfi
Fortuna Muliebris
Lucus Dea Dia
Laurentina
Alba
Tyrrhenian Sea
Lavinium
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39. Visibility analysis (viewsheds) from the highest points of the Capitoline and Palatine Hills.

4.4. CONCLUSIONS

If one takes into consideration previous attempts to identify the limits of the *ager Romanus antiquus* on the basis of literary sources, the topographical reconstruction of the most ancient territory of Rome results in an area of 19,100 ha (ca. 191 km^2), with 11,820 belonging to the Latin side and 7,280 to the Etruscan. A number of theoretical approaches (Thiessen polygons, land carrying capacity and viewshed analysis) used to determine the extent of this territory in different phases on the basis of the archaeological evidence, and, separately, from literary accounts, give similar figures. Furthermore, the theoretical analyses seem to be consistent with an early date for the *ager Romanus antiquus*, at least before the Archaic Age, as already suggested by several scholars on the basis of literary sources.[125]

In particular, the construction of Thiessen polygons (planar and weighted) and the calculation of carrying capacity suggest that the *ager Romanus antiquus* (Latin side) was probably a sustainable territory for Rome at an early stage of the Early Iron Age (second half of the tenth century) and earlier during the Final Bronze Age (the twelfth and eleventh centuries BC).[126] From the advanced Early Iron Age 1 (during the ninth century BC), however, with the dramatic enlargement of the settled area and the shift of the funerary areas from the Forum to the Esquiline and Quirinal Hills, the Latin side alone would not have been sufficient and an area corresponding to the entire *ager Romanus antiquus* would have been required. Later, during the advanced Early Iron Age 2 and the Orientalizing Age (the eighth and seventh centuries BC), an even larger territory would have been necessary to feed the population of Rome.[127]

Therefore, the archaeological analysis based on different theoretical models seems to confirm that the *ager Romanus antiquus* was already the geographical basin of a community focused on the Tiber and its ford during the Bronze Age, which went on to develop into the Roman polity during the Early Iron Age. In particular the *ager Romanus antiquus* seems to have been a sustainable territory for Rome, particularly during Early Iron Age 1 Early/Late, which is consistent with the date suggested by Colonna – Latial Phase IIB (first half of the ninth century BC) – on the basis of the dating of the fortification walls of Acqua Acetosa Laurentina, one of the boundary Latin settlements at the fifth–sixth miles from Rome.[128]

Later, as suggested by literary accounts and not contradicted by archaeological evidence, the *ager Romanus antiquus* was probably politically formalised by a foundation rite at the time of the foundation of the city (during the eighth century BC), when the urban space was defined and distinguished from the rural area. However, the calculation of the carrying capacity suggests that probably by the end of the ninth and beginning of the eighth century, with the creation of a very large settlement, and more certainly by the end of the eighth and beginning of the seventh century BC, with the consolidation and probably formal foundation of the city, the territory of the *ager Romanus antiquus* could not have sustained the urban and rural population of Rome. This may suggest that the traditional accounts of the aggressive stance of the city towards neighbouring communities from a very early stage reveal a core of historical truth.

FIVE

THE TERRITORIAL LEVEL: THE ROMAN HINTERLAND FROM THE BRONZE AGE TO THE REPUBLICAN PERIOD

5.1. INTRODUCTION

In this chapter the landscapes of a sample area in the immediate surroundings of Rome will be reconstructed. The physical characteristics of the territory will be considered in relation to the archaeological evidence in order to identify settlement patterns and manifestations of human presence through time. As discussed in 'The Territorial Sample' in Section 2.3, this area, located to the north-east of the periphery of Rome and included in the city's 4th Municipal District falls outside the limits of the most ancient territory of Rome, the *ager Romanus antiquus*, and was integrated into the territory of Rome only from the Archaic Age onwards.

However, it was chosen as the sample area for three main reasons:

1. There exists a large quantity of survey data generated by recent studies carried out using modern scientific methods, thanks to the fact that the area remains mostly non-urbanised.[1]
2. The area is of historical interest: it was part of the territory of Crustumerium, Fidenae and Ficulea, three Early Iron Age middle-sized Latin proto-urban centres, and during the Archaic Age it became part of the territory of Rome. Therefore, the micro-history of this area sheds new light on the relationship between those centres and their hinterlands, as well as among themselves and, later, on the impact of Rome on their destiny; it also provides insight into land use and exploitation in a region very close to Rome since the Archaic Age.

3. The area is a well-defined geographical and morphological unit, corresponding to the fluvial basin of the stream Fosso di Settebagni/Fosso di Tor S. Giovanni/Fosso Spallette di Margherita, which is an area geographically defined and is therefore free of boundary issues and suitable for locational analyses.

As already mentioned, while it is not possible to draw general conclusions about the whole territory of Rome from the analysis of a sample area, this territorial investigation nonetheless provides a valuable micro-historical study, which can be compared with the regional macro-history (Chapter 6) and with other micro-histories within the same zone or neighbouring regions.

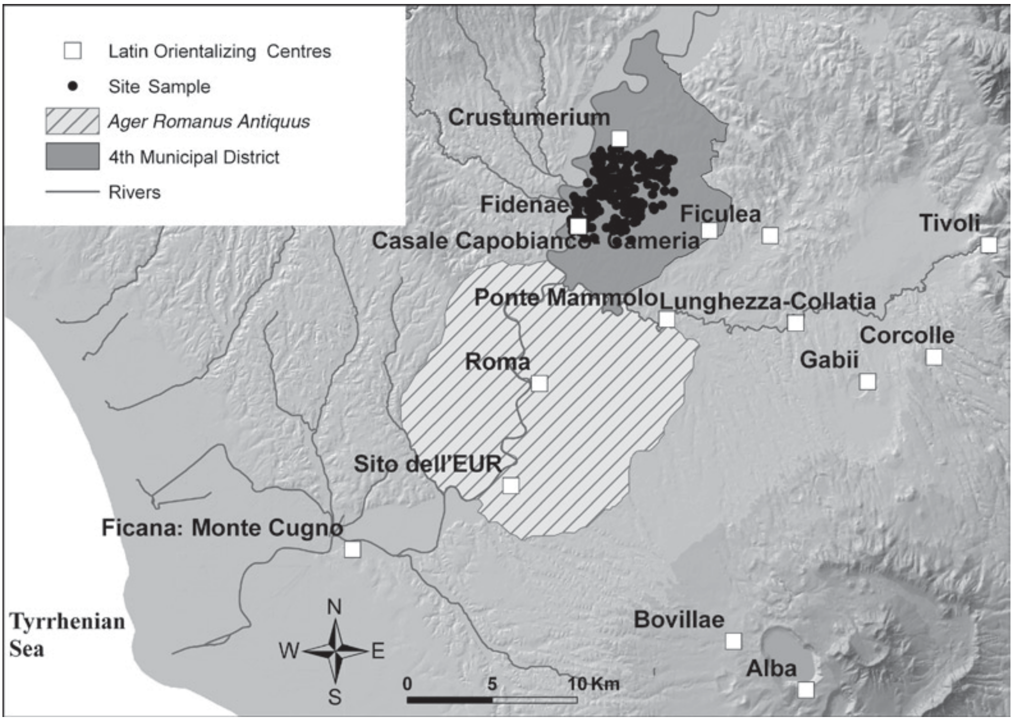
5.2. DATA SAMPLE AND SETTLEMENT TYPOLOGY

As already discussed ('The Territorial Sample' in Section 2.3; Section 5.2), a limited portion of the hinterland of Rome (Fig. 40) was selected for the study of settlement patterns over time. In this chapter the possible association of sites with a few physical variables (geology, elevation, slope and distance from rivers) and regular patterns in their spatial location will be investigated.

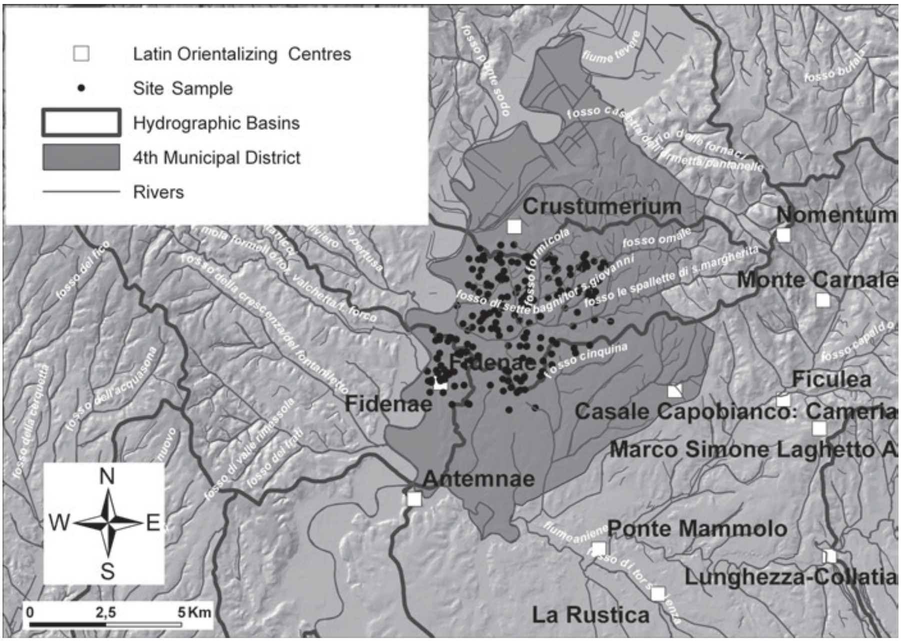
As mentioned in the preceding section, the sample area is included in the 4th Municipal District of Rome, and it was chosen for its historical interest, being part of the territory of three Latin Early Iron Age proto-urban centres before becoming part of the territory of Rome in the Archaic Age. In addition, it was intensively surveyed in the 1990s as part of a project conducted by the University of Rome 'La Sapienza' (Andrea Carandini) in collaboration with the Soprintendenza of Rome (Francesco di Gennaro) and had already been studied by Lorenzo and Stefania Quilici as part of the Latium Vetus Project funded by the CNR (Italian National Research Council).[2]

As a result of these recent studies, which made use of modern survey techniques, this area was chosen for the study of settlement patterns with a specific focus on pre-Roman times. In addition, the area represents a well-defined morphological and geographical unit, corresponding to one of the basins of the lower course of the Tiber, as defined by the geographical service of the Regione Lazio (County Council), from whom the digital data were obtained. Specifically, the area constitutes the western part of the basin of the stream Fosso di Settebagni / Fosso di Tor S. Giovanni / Fosso Spallette di Margherita with its tributaries, Fosso della Formicola and Fosso Ornale (Fig. 41). As it is a natural morphological unit clearly defined by geographical boundaries rather than by arbitrary limits, the sample area is especially suited for locational and rank-size analyses, which require exactly defined boundaries, sample structure and distribution.

While a more comprehensive and detailed discussion of the survey methodology and techniques applied by the Suburbium Project can be found in a recent publication by Cristiana Cupitò,[3] it is important to provide some


Latin Orientalizing Centres
Site Sample
Ager Romanus Antiquus
4th Municipal District
Rivers
Crustumerium
Fidenae
Ficulea
Tivoli
Casale Capobianco
Cameria
Ponte Mammolo
Lunghezza-Collatia
Corcolle
Gabii
Roma
Sito dell'EUR
Ficana: Monte Cugno
Tyrrhenian Sea
Bovillae
Alba
N
W
E
S
0
5
10 Km

40. Localisation of the site sample used for analysis at the territorial level.


Latin Orientalizing Centres
Site Sample
Hydrographic Basins
4th Municipal District
Rivers
Crustumerium
Nomentum
Monte Carnale
Fidenae
Ficulea
Casale Capobianco: Cameria
Marco Simone Laghetto A
Antemnae
Ponte Mammolo
Lunghezza-Collatia
La Rustica
fiume tevere
fiume aniene
fosso cinquina
fosso di sette bagni
fosso formicola
fosso del fico
fosso dell'acquasona
fosso della cerquetta
fosso di valle rimessola
fosso della crescenza
fosso di tor s. giovanni
fosso le spallette di s. margherita
fosso ormale
fosso bufalotta
fosso capaldo
N
W
E
S
0
2,5
5 Km

41. Site sample used for analysis at the territorial level.

Table 16. Studies of the Suburbium Project in the sample area

Tenuta	Author	Dissertation title	Year
Ciampiglia Del Bufalo	Gianluca Di Girolami	'Resti archeologici e ricostruzione dei paesaggi antichi nel territorio della IV circoscrizione del Comune di Roma. La tenuta di Ciampiglia Del Bufalo'	1994–95
Casale della Donna	Elena Foddai	'Ricostruzione dei paesaggi antichi attraverso le presenze archeologiche nel territorio del suburbio. La tenuta di Casale della Donna'	1995–96
Malpasso Inviolatella and Marcigliana	Fabiola Fraioli	'I paesaggi antichi della Campagna Romana. Verifica sul terreno e ipotesi di ricostruzione nelle tenute di Malpasso, Inviolatella e Marcigliano'	1996–97
Settebagni	Alessandra Tronelli	'La tenuta di Settebagni e il C.D. Praetorium Fidenatium. Indagini di Superficie e analisi di un complesso monumentale'	1996–97
Radicicoli Del Bene	Francesca Dell'Era	'Resti Archeologici e ricostruzione dei paesaggi antichi nel territorio della IV circoscrizione del Comune di Roma. La tenuta di Radicicoli Del Bene'	1996–97

information on the origin of the data used in the present work and its suitability for the proposed research. The aim of the Suburbium Project was an integral investigation of the territory surrounding the city of Rome (Agro Romano) in order to increase our knowledge of its rural landscape in ancient times and to provide a means to better understand, and so manage and safeguard, its archaeological heritage.

The territory was divided according to the boundaries of the *tenute* (land parcels) present in the *Catasto Alessandrino* ('Cadastre' compiled under Pope Alexander VII in 1660–61).[4] This document was the first to provide a detailed picture of the juridical land parcels of the territory around Rome. Each *tenuta* of the *Catasto* represents a productive unit belonging to a single owner (person or juridical entity), which remained a topographical reference in all official documents during the following two centuries, including official excavation reports and topographical studies.

With the modern urbanisation of Rome, the boundaries of the *tenute* lost their meaning and were even physically obliterated. However, from 1661 until 1960–70 they can be considered reliable sources of information about the juridical parcels of the rural territory of Rome at that time and possibly evidence of earlier divisions of the territory. For this reason, the individual *tenute* were chosen as the territorial units of study and were individually assigned to researchers as subjects of *tesi di laurea* (master's dissertations), to be investigated on the basis of bibliographical, archival and direct survey. Table 16 shows the works consulted for the present study.[5]

Common research strategies, methodologies and survey techniques were adopted. Archive and bibliographical information was integrated with field surveys, which were sometimes repeated at different times of the year to improve visibility (generally immediately after ploughing). All archaeological features were investigated from pre-historic to medieval times; atmospheric variables, visibility conditions and geological factors were also taken into account.

With respect to the criteria adopted for classifying and interpreting scatters of finds, the first major publications of the Suburbium Project were published after data analysis for the present work had been completed; therefore, it was not possible to take them fully into consideration. However, as shown later, there are some significant points of contact, such as the distinction between 'small' (less than 1 ha) and 'large villages' (between 1 and 5 ha) and the adoption of the ambiguous concept of 'village/villa' in both works.[6] For the analyses performed in this work, site classification criteria adopted by authors involved in the Albegna Valley Project offered the main point of reference (see Tables 17 and 18). For instance, as suggested by Phil Perkins, when no typical funerary evidence is available to define a site as a house or a tomb or a small necropolis, it is critical to adopt an explicitly uncertain definition (house/tomb or house/necropolis) rather than impose an interpretation solely on the basis of site extent.

The distinction between villages (more than 1 ha and less than 4 ha), minor centres (more than 4 ha) and cities (more than 30 ha) suggested by Perkins also correlates quite well with the hierarchy established in this work, where 'cities' are recognised as settlements larger than 20–25 ha (see Section 5.2; Figs. 31 and 32). Among villages, another distinction is made between villages smaller than 10,000 m^2 or 1 ha (villages B) and villages larger than this size, between 1 and 4 ha (villages A).[7] This further distinction is made because within the limits of the sample area, in the territory between Crustumerium, Fidenae and Casale Capobianco, there are no minor centres (between 4 and 20–25 ha), but three villages belonging to the higher category (villages A) seemed to act as second-order centres, sort of middle 'redistribution' centres in the place of larger minor centres (cf. 'Site Distribution and Hierarchical Levels: Territorial Sample' in Section 5.4). Finally, generic definitions of house/farmstead and of villa have been adopted, thus avoiding any sub-differentiation.[8]

Finally, the classification of sites clearly identified as villas in the Republican Period but with associated material of earlier phases should be discussed. Given the growing evidence of villas with archaeological evidence of phases dating back to the Archaic Age,[9] the unambiguous definition of 'villa' has been adopted for those sites with material evidence clearly indicating the presence of a villa during Republican or Imperial times, but with associated 'high-status' material dating back at least until the Archaic Age.[10]

Table 17. Criteria adopted for the classification of sites in the Albegna Valley Survey by Perkins

Site interpretation	Area (m^2)	Criteria
House/tomb	1–200	A thin surface scatter, smaller than 200 m^2, without specific evidence to suggest it is a house or a tomb
House/ farmstead	1–1,000	A surface scatter, smaller than 1,000 m^2, containing loom weights, slugs, grinding stones or *pithoi* associated with roof tiles, etc.
House/ necropolis	200 $\gtrless$ 1,000	A thin surface scatter, larger than 200 m^2 and smaller than 1,000 m^2, without evidence to suggest it is a house or a necropolis
Villa	>2,500	(1) Standing productive or residential structure, clearly related to a villa; (2) architectural fragments, column drums, painted wall plaster; (3) a surface scatter larger than 2,500 m^2, with high concentrations of finds, especially building materials or architectural decorations
Fortified hilltop		Defensive walls around hilltops smaller than 4 ha
Village	1,000 $\gtrless$ 40,000	(1) Scatter of material classifiable as a house, larger than 1,000 m^2 and smaller than 4 ha; (2) a series of scatters clearly identifiable as house material, each larger than 100 m^2 and totally less than 4 ha
Minor centre	40,000 $\gtrless$ 300,000	(1) Scatter of material classifiable as a house, extending more than 4 ha; (2) presence of recognisable defence (e.g., a wall) enclosing more than 4 ha
City	>300,000	Scatter of material identifiable as a house, extending over more than 30 ha
Kiln		Presence of ceramic waste or by-products
Sporadic		Very thin or small scatter of material or stray finds not identifiable as any of the above
Temple		Architectural terracottas of temple type
Road		Alignment of stones or cutting in the rock

From Perkins 1999, pp. 18 ff.

In addition, the ambiguous term ‘village/villa’ has been introduced to identify a particular type of site recurring in several works in the Suburbium Project; it is characterised by an apparent sequence and shift in function from village to villa. In fact, this term indicates very large sites with clear evidence of the presence of a villa in Republican times but with a continuity of occupation dating back until at least the Orientalizing Age (and sometimes even earlier).

Since the function of these sites, especially in the earlier phases, cannot be easily or clearly identified, the generic term ‘village/villa’ has been adopted.[11] A greater understanding of this ambiguous type of site would help us to better define the origin of the villa, which now seems to date back to at least the Early Republican Period or even the Archaic Age, as demonstrated by the recent discovery of the so-called Auditorium villa in Rome and other re-evaluation studies of old excavations of villas in the areas surrounding the city.[12]

Table 18. Criteria adopted for the classification of sites in the Albegna Valley Survey by Italian scholars

Site interpretation	Area (m^2)	Criteria
House/tomb	1–100	A thin surface scatter, smaller than 100 m^2, without specific evidence to suggest it is a house or a tomb
Tomb		Funerary material
Necropolis		A group of more than five tombs
House 1	1–900	Building material but lack of luxury or architectural decoration (marble, mosaics, etc.)
House 2	1–900 (high concentration) or 1,200 $\gtrless$ 2,500 (low concentration)	Stone structures and/or presence of high-quality architectural decoration (*opus spicatum*, marble, mosaics, plasters, etc.)
Village 1	40,000 $\gtrless$ 100,000	Presence of building material but lack of architectural decorations
Village 2	100,000 $\gtrless$ 250,000	Presence of building material but lack of architectural decorations
Villa	>2,500	Standing structure clearly related to a villa, or surface scatter, larger than 2,500 m^2, containing architectural fragments related to the residential (marbles, mosaics, plasters, etc.) or productive parts (e.g., *turcularium*) of a villa
Temple/sanctuary		Presence of cult material (architectural terracottas of temple type, votive objects or inscriptions, etc.)
Kiln		Presence of ceramic wastes
Manure		Great quantity of material (pottery, *amphorae*, bricks or tiles) but with no significant association
Cave		
Sporadic		Very thin or small scatter of material or stray finds not identifiable as any of the above
Cistern/well		
Bridge		
Cunicolo		

From Carandini et al. 2002, p. 59.

Thus the classification adopted in the present work is summarised in Table 19, while the frequency of sites by type is given in Table 20.

5.3. SETTLEMENT PATTERN ANALYSIS

Settlement History

Figure 42 shows the frequency of sites for each phase. Although there can be no certainty that all the sites were simultaneously occupied, the number of sites

Table 19. Criteria adopted for the classification of sites in the present work

Site interpretation	Area (m^2)	Criteria
House/tomb	1–200/250	A thin surface scatter, smaller than 200/250 m^2, without specific evidence to suggest it is a house or a tomb
House/necropolis	200/250 ≷ 1,000	A thin surface scatter, larger than 200/250 m^2 and smaller than 1,000 m^2, without specific evidence to suggest it is a house or a necropolis
Tomb	1–50	Funerary material
Necropolis	50 ≷ 1,000	Funerary material
House/farmstead	1–1,000	A surface scatter, smaller than 1,000 m^2, with building material (roof tiles, bricks, etc.) and/or domestic pottery or objects (loom weights, grinding stones, *pithoi*, etc.) but lack of luxury or architectural decoration (marble, mosaics, etc.)
Villa	>2,500	Standing structure clearly related to a villa or surface scatter, larger than 2,500 m^2, containing architectural fragments related to the residential (marbles, mosaics, plasters, etc.) or productive parts (*turcularium*, etc.) of a villa
Villa/village	>2,500	Same as villa but with material dating back to the Archaic, Orientalizing, Iron and Bronze Ages
Village A	1,000 ≷ 10,000	Scatter of material identifiable as a house, between 1,000 m^2 and 1 ha
Village B	10,000 ≷ 40,000	Scatter of material identifiable as a house, between 1 and 4 ha
Minor centre	40,000 ≷ 200,000–250,000	Scatter of material identifiable as a house, larger than 4 ha and less than 20–25 ha; or fortified area, larger than 4 ha and smaller than 20–25 ha
City	>250,000	Scatter of material identifiable as a house, larger than 20–25 ha; or fortified area, larger than 20–25 ha
Sanctuary/cult Place		Standing temple structure or presence of cult material (architectural terracottas of temple type, votive objects or inscriptions, etc.)
Productive site		Presence of ceramic or metallic wastes
Rubbish pit		Pit filled with pottery and/or bones, ashes, etc. but no clear evidence of ritual activity
Sporadic		Very thin or small scatter of material or stray finds not identifiable as any of the above
Cistern/well		
Bridge		
Cunicolo		Drainage channels, excavated generally in tuff soil

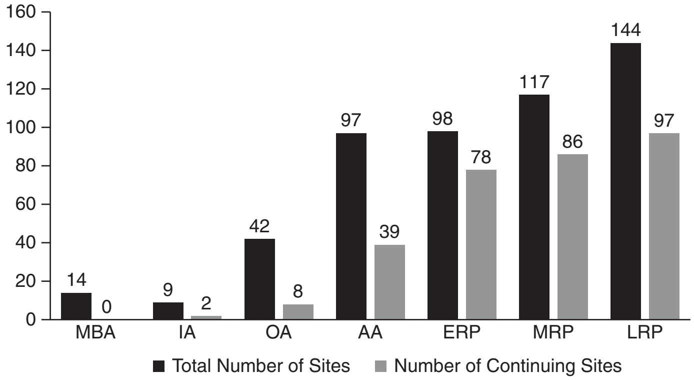
Table 20. Frequency of sites by type

Type of site	Number of sites
Bridge	3
Cistern/well	4
Cunicolo	4
House/farmstead	71
House/necropolis	6
House/tomb	8
Necropolis	15
Cities	2
Productive site	1
Quarry	2
Rubbish pit	2
Sanctuary/cult place	4
Sporadic	3
Tomb	3
Villa	45
Village	20
Village/villa	16
Total	209

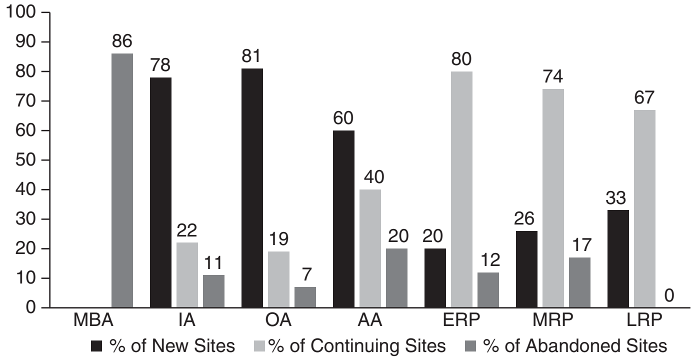
also occupied in the preceding period provides a measure of settlement continuity and the likelihood that sites were occupied through these periods.[13] The graph shows a slight decrease in the total number of sites from the Bronze to the Early Iron Age followed by a continuously increasing trend. From the Early Iron Age to the Archaic Age the increase is particularly significant: the frequency of sites increases by a factor of 4 from the Iron to the Orientalizing Age and is doubled again from this time to the Archaic Age.[14] From the Archaic Age to the Early Republican Period the number of sites remains constant, while there is an increase from the Early to the Middle Republican Period and more dramatically in the Late Republican Period.[15]

The rapid demographic growth from the Early Iron Age to the Archaic Age (Fig. 42)[16] is confirmed by the percentage of new sites for each phase, which is considerably higher for the earlier phases and decreases dramatically during the Republican Periods (Fig. 43). The decrease in the number of sites from the Bronze to the Early Iron Age (Fig. 42) has also been observed in some areas of southern Etruria[17] and has generally been explained by settlement nucleation and centralisation, with the formation of large proto-urban centres on the plateaux later occupied by the cities of the Archaic Age.[18]

This pattern is also confirmed by the high percentage of Bronze Age abandoned sites (86%), which together with the high percentage of new sites indicates a complete relocation and reorganisation of settlement patterns (Fig. 43). The increase in the total number of sites (Fig. 42) and the high percentage of new sites (Fig. 43) during the Orientalizing Age has been explained by a



42. Territorial sample: site frequency summary graph.



43. Territorial sample: site continuity summary graph.

process of 'colonisation' of the countryside by aristocratic groups, which was originated and directed by elites who wielded power in the recently formed cities (mid-eighth century BC).[19]

The continuously increasing trend during the Archaic Age and the stability of the number of settlements from the Archaic Age to the Early Republican Period (Fig. 42) mitigates the idea of crisis in the fifth century BC, traditionally upheld by several authors.[20] In a preliminary report of the results of the Suburbium Project, Carafa has suggested that a continuous growth in the number of sites suggests an increasing capillary occupation of the countryside without any sign of significant crisis.[21]

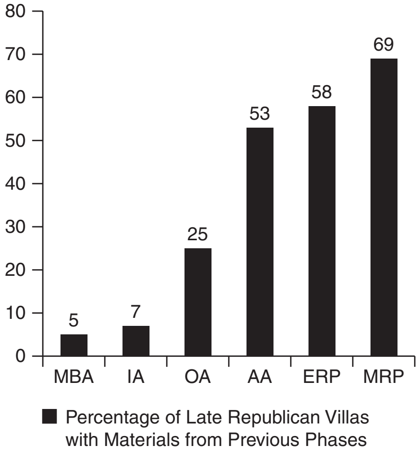
A comparison between the frequencies of new, continuing and abandoned sites, however, suggests that within the sample area the Archaic Age is a time of stasis in demographic growth and of changes and transformations in settlement trends. In this period, in fact, the number of new sites and continuing sites is almost equal and the number of abandoned sites increases (Fig. 43).

For the territory specific to this study, between Crustumerium and Fidenae, Pietro Barbina has associated the large number of new sites together with the larger number of abandoned sites with the reorganisation of the territory after the creation of local tribes and the occupation of the territory by the Roman Claudia tribe. When this *gens* (variously translated as 'clan', 'lineage' or 'house')[22] moved into enemy territory, they most likely occupied a fortified settlement, which could have been the site of Casal Boccone, according to Barbina, who follows the interpretation by Rodolfo Lanciani.[23]

To conclude, it cannot be denied that the fifth- to fourth-century gap in the settlement pattern, as observed in the re-evaluated South Etruria Survey sample, must be related to a real crisis of the Etruscan society. As Helen Patterson and other members of her team have noted, the fifth century is also characterised by a marked transformation in the economic and ideological spheres.[24] In fact, in the Archaic Age a contraction in production, commerce and construction is registered,[25] and grave goods become rarer and prestigious artefacts are increasingly restricted to sanctuaries, probably as a result of sumptuary legislation introduced by the Twelve Tables.[26] However, as suggested by settlement trends within the sample area and wider analyses conducted by the Suburbium Project, it is possible that the situation south of the Tiber might be slightly different from that of the Etruscan region.

As will be shown later, the analysis of specific types of sites, such as villas, farmsteads and sites, defined in the present study as generic villages/villas, will reveal interesting changes in patterns of land management and land use in this portion of the territory of Rome and will shed new light on another important topic in the study of the rural landscape in central Italy, which is the beginning of the villa. This theme has been revitalised by the excavation of the Auditorium villa in Rome, which dates back the origin of the Roman villa to at least the Archaic Age.[27] As already mentioned, a contribution to the debate on the dating of the origin of the villa could be made by a closer analysis of those sites identified in the territory of Rome by recent surveys that present clear signs of the presence of a villa during the Late Republican Period but also exhibit materials from previous phases (those sites have been defined in this study as village/villa).

The present work makes use of the quantitative analyses applied by Helga di Giuseppe to similar types of sites from the Tiber Valley Project.[28] Thus a new set of data is added to the discussion, and adopting the same methodology allows a better comparison between data from different regions. As already mentioned, the analysis presented here is focused on sites clearly identified as villas in the Late Republican Period by size and the presence of architectural decorations, luxury materials and/or remains of productive structures, but which also contain material from earlier phases. Figure 44 illustrates the percentage of villas with older material for each phase from the Bronze Age to the Middle Republican Period.

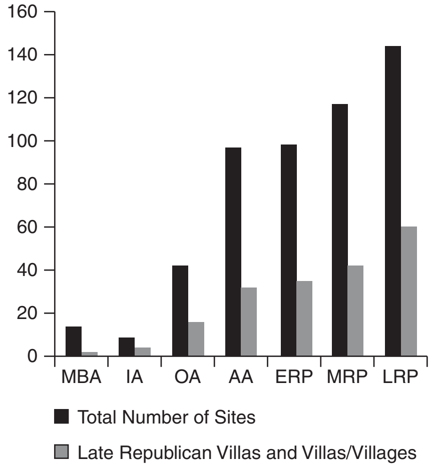


44. Territorial sample: sites identified as villas in the Late Republican Period with material from earlier phases (e.g., 5% of Late Republican Period villa sites contain material from the Middle Bronze Age).

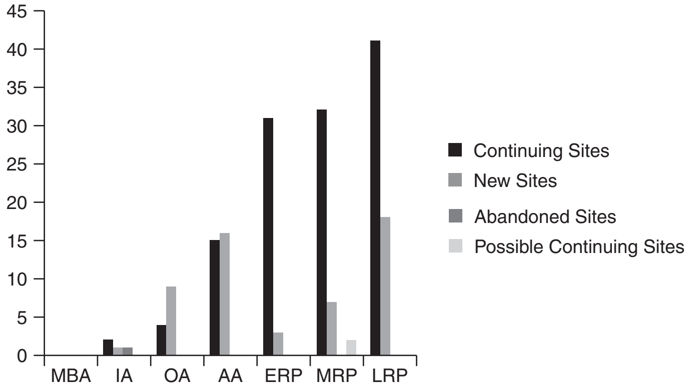
The methodology consists of determining the number of those sites in each chronological phase and comparing it with the number of simple houses/farmsteads – that is, smaller, simpler sites, where building material or domestic pottery/objects have been found but luxury decoration or significant productive equipment has not. These quantitative analyses, which allow the identification of long-term settlement patterns for these types of site, will shed new light on the problem of the origin of the villa.

The comparison between the total number of sites and the number of sites later identified as villas shows similar trends for the two categories of sites: a dramatic increase during the Orientalizing Age and, even more so, the Archaic Age and then a constant, slow growth (Fig. 45). The South Etruria Survey showed overall a similar trend but also some differences. Firstly the general growth is intermitted by some ups and downs, which reveal a more pronounced crisis; secondly the increase of sites, later identified as villas, was more stable in comparison with the pattern of general settlement sites.[29]

An analysis of the continuity of sites identified as villas in the Late Republican Period shows a similar pattern in the re-evaluation of the South Etruria Survey and in the Suburbium Project sample[30] (Fig. 46). The number of sites of this type dramatically increases during the Orientalizing and Archaic Ages, when the number of new sites is double or equal to the number of continuing sites. Then the total number of sites continues to increase slowly, but the number of continuing sites is much larger than the number of new sites. With the Late Republican Period the number of new sites increases sharply again. The continuity and stability of sites observed during the Early



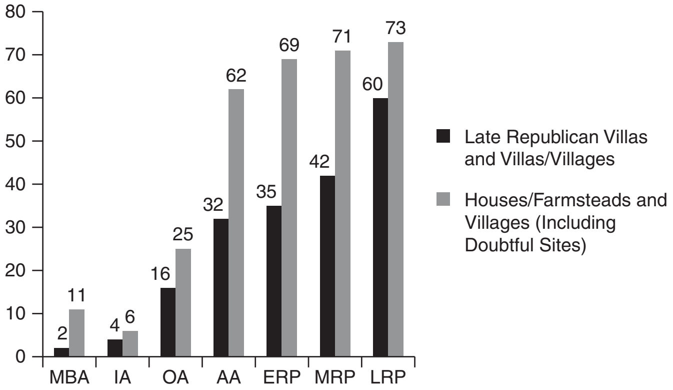
45. Territorial sample: comparison between the total number of sites and the number of sites identified in the Late Republican Period as villas.



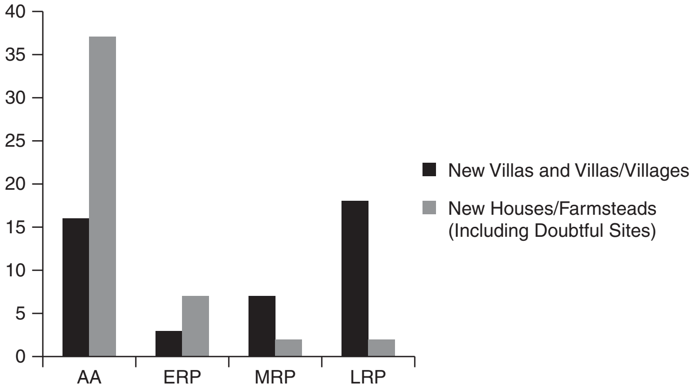
46. Territorial sample: continuity of sites identified in the Late Republican Period as villas. Continuing sites are those that contain material from the preceding phase; new sites are those that have have been occupied for the first time; abandoned sites show no continuity with previous phases; possible continuing sites are those with material from the previous and the following phases with a gap in the continuity of occupation.

and Middle Republican Periods are the same in the two areas, north and south of the Tiber.

The comparison between the number of farmsteads and the number of sites later identified as villas (Fig. 47) also reveals similar patterns in the Suburbium Project sample and the re-evaluation of the South Etruria Survey. For every two farmsteads or villages during the Archaic Age, there is one potential villa. As noted by Helga di Giuseppe we cannot be sure about the interpretation of those sites before the Republican period, when they can be clearly be identified as villas by their material evidence (presence of architectural decoration or productive equipment, etc.); but the trend is nevertheless significant. In fact,



47. Territorial sample: comparison between the total number of sites identified as villas in the Late Republican Period and the total number of houses/farmsteads and villages (including doubtful sites).



48. Territorial sample: comparison between the number of new villas (among the sites identified as villas in the Late Republican Period) and new houses/farmsteads (including doubtful sites).

if this pattern is linked to the recent excavation of the Auditorium villa[31] and to other new or existing villa complexes excavated within the territory of Rome, which show a continuity of occupation at least from the Archaic Age,[32] then it should probably be admitted that the villa has an early origin and that more investigation is necessary. This relationship between the number of villas and farmsteads (one potential villa for every two farmsteads/villages) remains almost constant during the Early and Middle Republican Periods (Fig. 47).

When the number of new 'villas' (among the sites identified as villas in the Late Republican Period) is compared with the number of new houses/farmsteads, it can be observed that the number of new farmsteads diminishes from the Archaic Age to the end of the Republican Period, while the number of new villas doubles and even triples. By the Middle and Late Republican Periods, the proportion is reversed and the number of new farmsteads is dramatically lower than that of new villas (Fig. 48).

As Helga di Giuseppe suggested, it is possible to relate the diminished growth in the number of farmsteads and the explosive increase in the number of villas with the development of larger estates at the expense of small properties, which will lead to the agrarian crisis of the second century BC.[33] However, other explanations are possible. For example, Andrea Carandini suggests that the introduction of the villa and the development of the model of the *latifundia* is a gradual process, which has to be described in terms of continuous 'transformation' from the Archaic Age onwards rather than as a revolutionary change or a critical event.[34] Besides, the high density of sites in the sample area of the *suburbium* of Rome investigated in this study does not seem to allow for the spread of large *latifundia*.[35] In addition, as noted by Emilio Gabba,[36] the identification of villas or farmsteads/houses by survey research should be linked with caution to historical, demographic or economic interpretations such as the spread of *latifundia* and the crisis of small properties, because archaeology does not tell us about the juridical status of the land, and we do not know if small farmsteads were actually a part of larger villa estates, were allocated to tenants or were independent small properties.[37]

Finally, it has been suggested that the increase in villa sites during the Republican and Early Imperial Periods might be interpreted in terms of ideology, fashion and lifestyle rather than viewed from a more traditional, 'pure', productive and economic perspective. In some Roman provinces, such as Narbonese Gaul, it has been observed that villa sites often overlay small rural Iron Age sites. Thus the increase in the number of villas has been interpreted by Raynaud as a change in lifestyle rather than an actual growth in population density.[38] This French scholar explained the increase in the number of villas in Narbonese Gaul more as a consumption phenomenon and as an indication of growing materialism and wealth in Roman society as a whole than as a purely socio-economic event. Similarly, Terrenato, discussing the origin of the villa in relation to the Auditorium excavation in Rome, has suggested that the villa in Italy has to be seen as much as a cultural trend as well as an economic phenomenon.[39]

Settlement Patterns and Environmental Variables

In this section, the locations of sites will be considered in relation to the whole landscape. Settlement site location will be analysed in relation to the physical characteristics of the natural landscape in order to better understand why particular sites were chosen for settlements. This approach, favoured in environmental studies, was pioneered in the archaeological field by Gaffney and Stancic, with a study on the island of Hvar.[40] The development and widespread use of GIS has encouraged the dissemination of this approach, which is now common practice in landscape archaeology. In this work the location of sites (in the given sample area) will be analysed with reference to a variety of natural criteria: solid geology, altitude, slope and proximity to water.

Other criteria which could have been used are soil types, as defined by land evaluation studies, and proximity to communication routes. Soil type and ancient land evaluation is becoming more and more common in landscape archaeology research, but this type of analysis is not the specific focus of the present research.[41] The reconstruction of road networks and their relation to sites is also a topic which has never been undertaken in the region under study and would be a valuable theme for future research.[42]

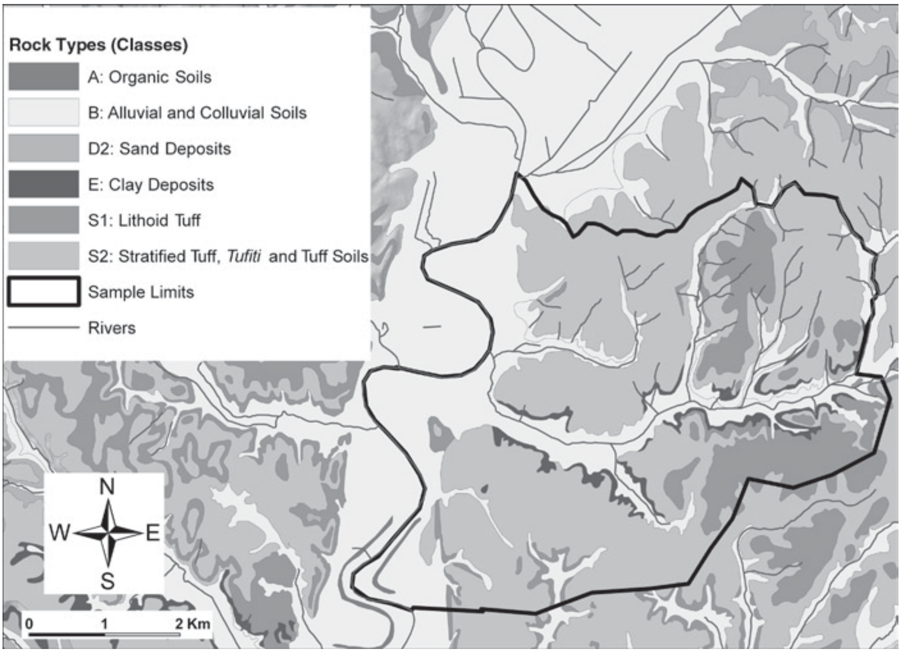
The purpose of analysing the location of sites in relation to natural variables is to identify what kind of location was chosen or preferred for settlements and how this changed over time. The same methodology was used for every analysis in every category. The digital data for each category (geology, altitude, slope and proximity to water) were defined according to different classes (geological rock types, degrees of altitude and slope and distances from rivers).

Then the association between sites and each class was identified. As shown in the calculations presented in Section A2.2 of the appendix, firstly, the distribution of settlements among different classes was calculated as a fraction (expressed as a percentage) of the number of sites per each class in relation to the total number of sites; secondly, the density of sites associated with each class was normalised taking into account the extent of land included in each class; and finally, the significance of the association between sites and land classes was verified by the chi-square goodness-of-fit test.[43]

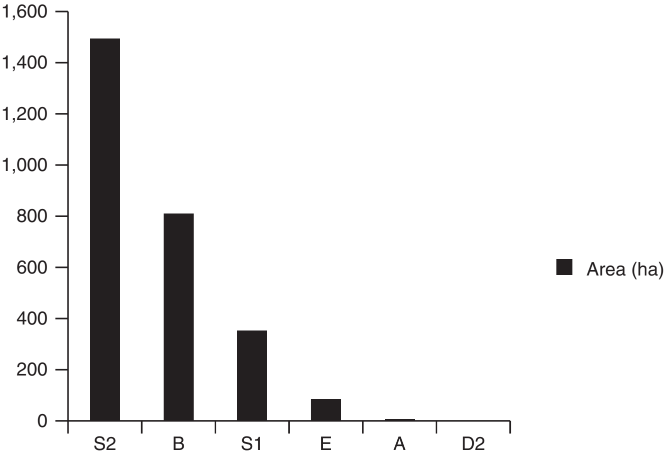
Geology

Figure 49 shows the rock types present in the area under study, and Figure 50 shows the distribution of classes. Tuff soils (class S2) are the most common, followed by colluvial and alluvial soils (class B) and by lithoid tuff (class S1). An almost irrelevant percentage of organic soils (class A) and sand deposits (class D) is also present (less than 1%).

Not surprisingly Figure 51 shows a higher percentage of sites associated with tuff soil and alluvial colluvial soils, which are the most fertile and appropriate for agricultural purposes. The normalised density, which also takes into account the extension of land for each class, is shown in Figure 52 and confirms this pattern. The graph shows a high density of sites on tuff soils, which is almost constant over time. It also shows a significant association with alluvial and colluvial soils, which seems to be quite high for the Bronze Age, while it is surprisingly lacking for the Early Iron Age and increases constantly from the Orientalizing Age to the Late Republican Period, with a small drop during the Middle Republican Period. The association between sites and clay deposits is distinctly higher for the Orientalizing Age than for later periods. The association of sites with lithoid tuff also decreases from


Rock Types (Classes)
A: Organic Soils
B: Alluvial and Colluvial Soils
D2: Sand Deposits
E: Clay Deposits
S1: Lithoid Tuff
S2: Stratified Tuff, *Tufiti* and Tuff Soils
Sample Limits
Rivers
N
W
E
S
0
1
2 Km

49. Territorial sample: rock types in the area.

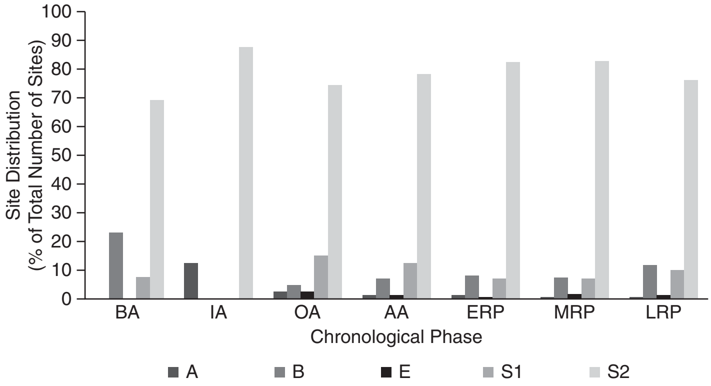


50. Territorial sample: land distribution according to rock types. S2, stratified tuff, *tufiti* and tuff soils; B, alluvial and colluvial soils; S1, lithoid tuff; E, clay deposits; A, anthropic soils; D2, sandy deposits.

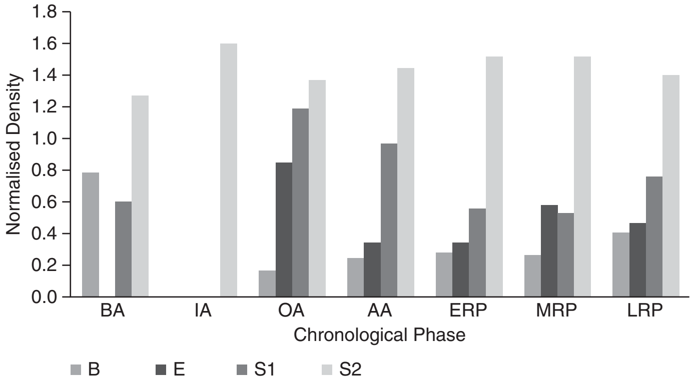
the Orientalizing Age onwards, with a gentle final increase during the Late Republican Period.

Altitude

Figures 53 and 54 show, respectively, the classes of altitude adopted in the analysis and the altitude distribution across the area under study. The greatest



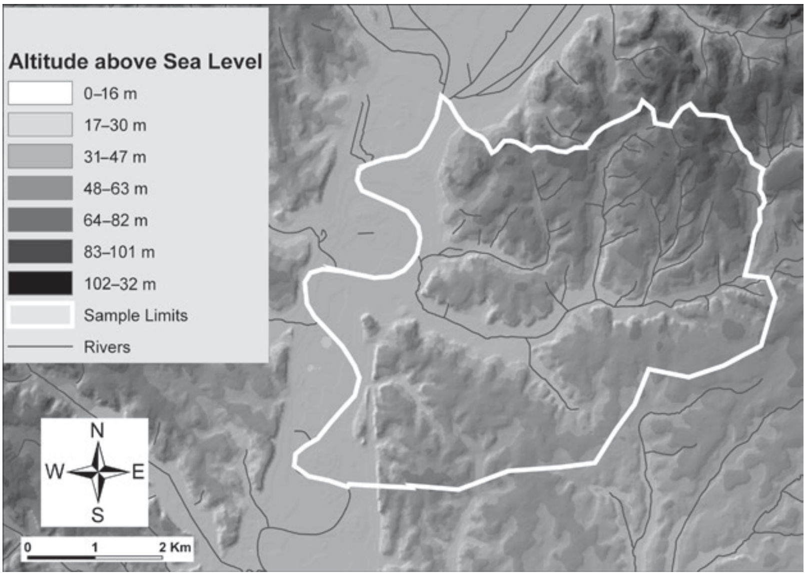
51. Territorial sample: site distribution according to rock types. A, organic soils; B, alluvial and colluvial soils; E, clay deposits; S1, lithoid tuff; S2, stratified tuff, *tufiti* and tuff soils.



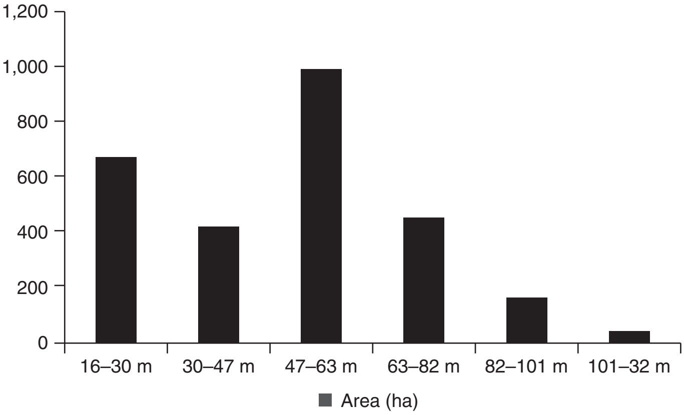
52. Territorial sample: normalised site distribution according to rock types. B, alluvial and colluvial soils; E, clay deposits; S1, lithoid tuff; S2, stratified tuff, *tufiti* and tuff soils.

portion of land is about 50 m above sea level. A small portion of territory is 80 m or more above sea level, and no part of it is more than 132 m above sea level. The remaining land is almost evenly distributed between less than 30 m above sea level and between 30 and 50 m above sea level and between 50 and 80 m above sea level.

The distribution of sites for each class according to the raw calculation of site percentages (Fig. 55) seems to show that the majority of sites are associated with intermediate altitude levels (around 50 and 60 m above sea level). But the calculation of normalised density, taking into account the distribution of altitude classes (Fig. 56), shows a different pattern. Sites from the Orientalizing Age onwards are significantly associated with a higher altitude level (more than 60 m above sea level). In particular the Republican Period shows a marked increase in the density of sites on land more than 100 m above sea level.


Altitude above Sea Level
0–16 m
17–30 m
31–47 m
48–63 m
64–82 m
83–101 m
102–32 m
Sample Limits
Rivers
N
W
E
S
0
1
2 Km

53. Territorial sample: classes of altitude (above sea level) in the area.

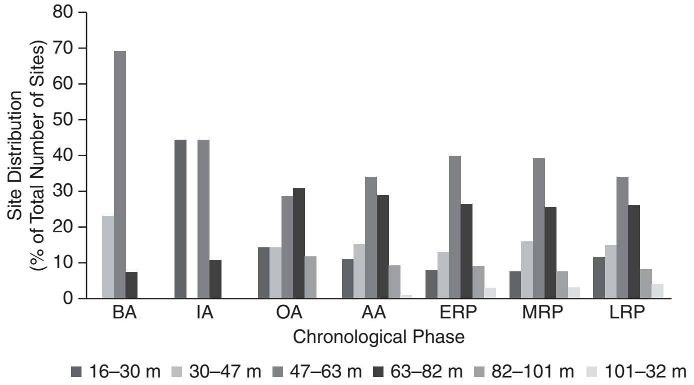


54. Territorial sample: land distribution according to altitude (above sea level).

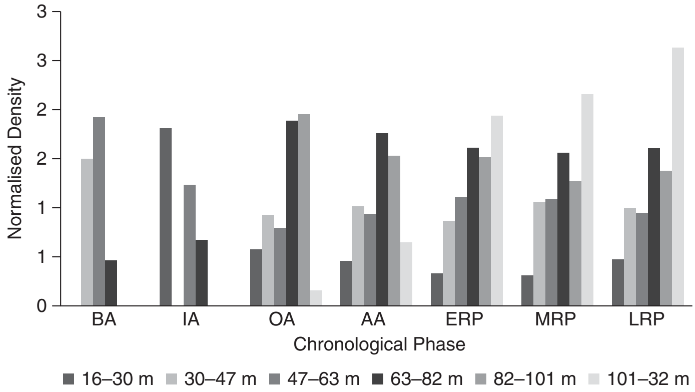
Slope

Slope, expressed as a percentage, was calculated by averaging 20-m^2 blocks of land, which is the resolution of the digital relief model of the terrain (digital elevation model, or DEM)[44] used for the analyses in this work.[45] Then, following Perkins's study, they were grouped into the following four classes: negligible, for slopes of 0–8%; slight, for slopes of 8–16%; moderate, for slopes of 16–25%; and steep, for slopes greater than 25% (Fig. 57).[46]

As shown in Figure 58, slopes within the sample area are generally negligible or slight. Figure 59 shows a strong association between Bronze Age sites and steep slopes. There is also a significant association between moderate



55. Territorial sample: site distribution according to altitude (above sea level).



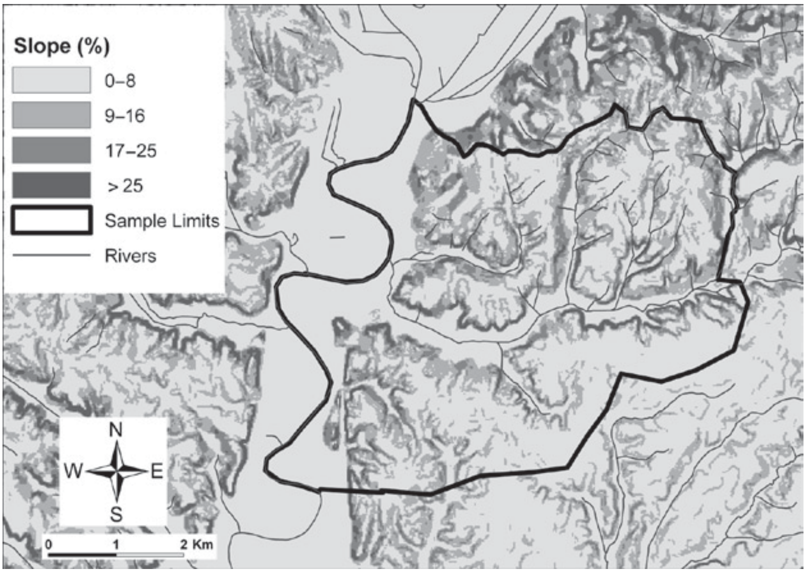
56. Territorial sample: normalised site distribution according to altitude (above sea level).

slopes and Bronze and Early Iron Age sites. The calculation of site density normalised against slope distribution confirms this figure and adds some details (Fig. 60).

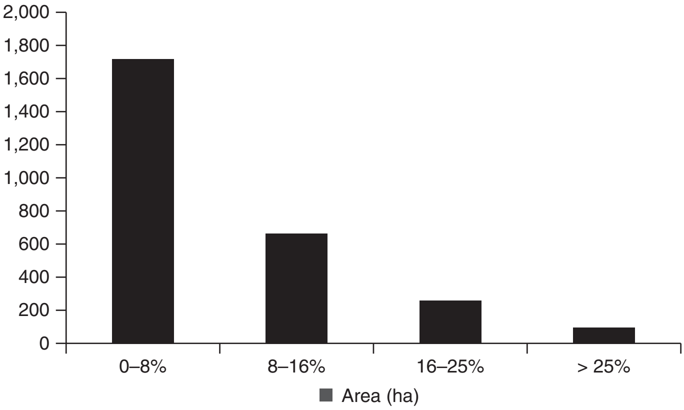
The association between Bronze Age sites and steep slopes is dramatically more pronounced than the range of values for all other chronological phases. Besides this exceptionally large value for Bronze Age sites, a relevant association between Early Iron Age sites with moderate slopes and between Late Republican sites with steep slopes can be observed. In general, the graph of the normalised densities shows a more significant association of sites with slight slopes rather than negligible ones.

Distance from Modern Rivers

To investigate the location of sites in relation to water, modern rivers were used for the analysis. In order to differentiate between seasonal and perennial streams, only rivers associated with alluvial deposits were considered. A number of scholars have suggested that rivers associated with substantial alluvial



57. Territorial sample: classes of slope within the area.

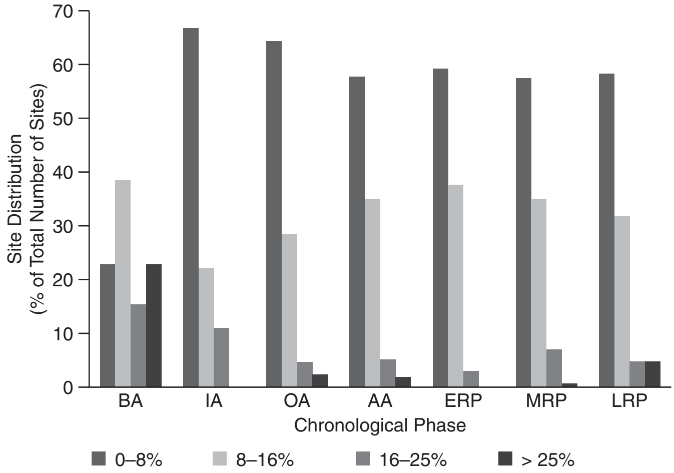


58. Territorial sample: land distribution according to slope.

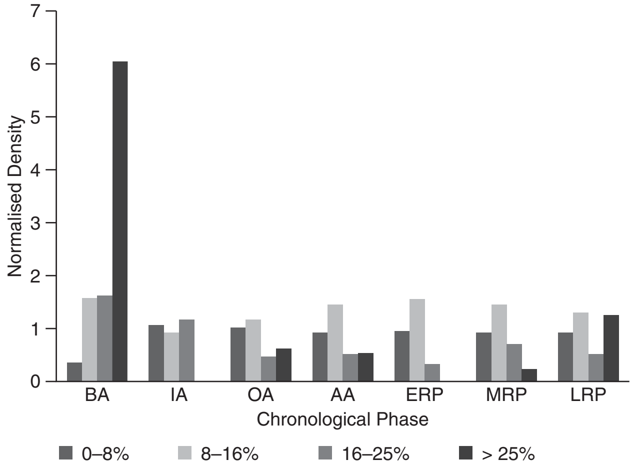
deposits in recent and modern times are likely to have been perennial streams in antiquity as well.[47]

The walking distance from modern rivers was calculated using the cost surface based on the association between time and slopes established by Machovina[48] and used by Ulla Rajala, as briefly described in 'Topographical Reconstruction of the Fifth–Sixth Mile Boundary' in Section 4.2. Then the continuous surface (GRID raster layer,[49] calculated in seconds) was organised into a number of discrete classes (vector polygon layer) as follows: 0–5, 6–10, 11–20, 21–30 and more than 30 minutes (Fig. 61).

The graph of land distribution according to walking distance from modern rivers (Fig. 62) shows that most agricultural land within the sample area lies within a 5 minutes' walk from water resources. The extent of the



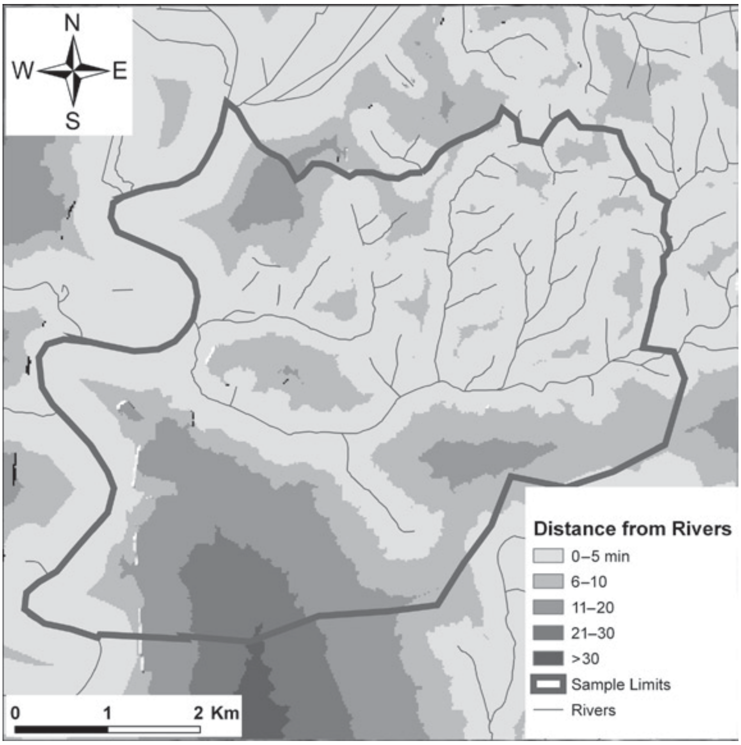
59. Territorial sample: site distribution according to slope.



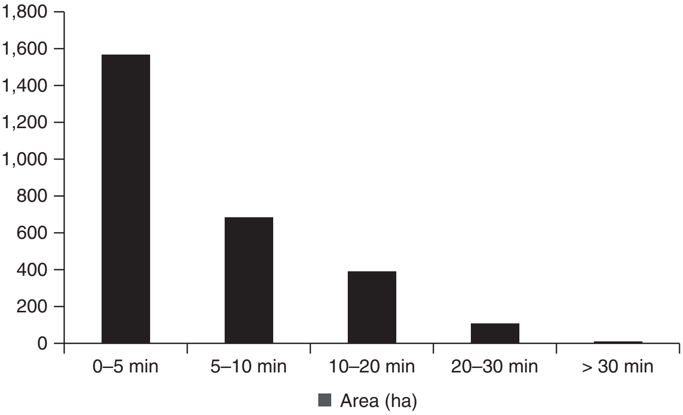
60. Territorial sample: normalised site distribution according to slope.

remaining area available progressively decreases with increasing distance, but in any case there is no land more than 30 minutes' walking distance from modern rivers.

The frequency of sites for each walking-distance class shows that sites are consistently located within a short distance from rivers, generally less than 5 minutes or between 5 and 10 minutes and rarely more than 20 minutes (Fig. 63). However, as shown in Figure 62, most land in the sample area is within those time ranges and no land is more than 30 minutes away from water.[50] Therefore, it is difficult to establish whether water availability was an important factor in settlement location.

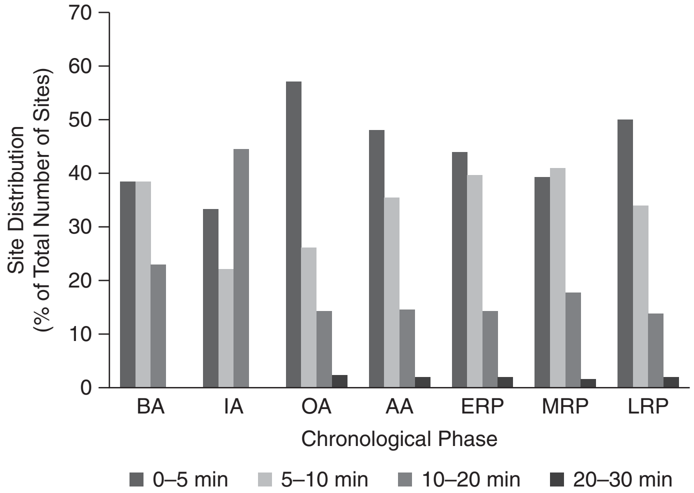

N
W
E
S
Distance from Rivers
0–5 min
6–10
11–20
21–30
>30
Sample Limits
Rivers
0
1
2 Km

61. Territorial sample: walking distance from modern rivers calculated in minutes required to walk through the landscape, modelled as a cost surface based on slope.

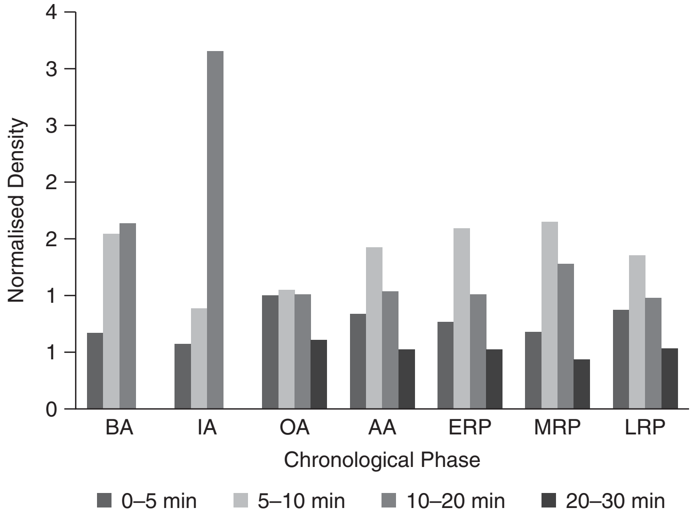


62. Territorial sample: land distribution according to walking distance (from modern rivers).

The calculation of site density normalised against the extent of land within a certain distance from rivers partially clarifies the situation (Fig. 64). While during the Bronze Age and Early Iron Age there are virtually no sites more than 20 minutes from water, from the Orientalizing Age onwards the number of sites lying between 20 and 30 minutes from water is not irrelevant when



63. Territorial sample: site distribution according to walking distance (from modern rivers).



64. Territorial sample: normalised site distribution according to walking distance (from modern rivers).

calculated against the extent of the land so distant from water resources. It is probably not by chance that from this time onwards a more organised drainage system is documented in southern Etruria and Latium vetus, both within urban contexts and in the countryside (*cuniculi*), and therefore areas even more distant from water resources could be irrigated. It should also be emphasised that the end of the Early Iron Age and the Archaic Age were among the rainiest centuries of the first millennium BC, which made the excavation and exploitation of the *cunicoli* drainage system a more valuable strategy.[51]

5.4 SOCIO-POLITICAL AND ECONOMIC LANDSCAPE: SETTLEMENT HIERARCHY

As demonstrated by a long tradition of studies crossing the boundaries of various disciplines such as geography, history and archaeology, distances between settlements have been found empirically to have some regularities in various parts of the world at different times. In addition, identified patterns correspond to different stages of socio-economic developments. The discipline which entails the study of those patterns is called 'settlement analysis' or, more specifically, 'locational analysis'.[52]

Some well-known methods which were originally developed by geographers and then adopted by archaeologists are the rank-size rule, central place theory and Voronoi polygons, all of which were used in the present work and will be illustrated more specifically in Chapter 6, where they will be applied at the regional level. In the following paragraphs the locational patterns identified at the territorial level will be illustrated and possible interpretations will be discussed.

Site Distribution and Hierarchical Levels: Territorial Sample

It will be shown in this section that settlement distribution at the different hierarchical levels within the sample area seems to follow land-use efficiency principles, as predicted by the settlement dynamic model proposed by John Bintliff[53] and described in Section 1.2. In order to identify regular patterns in the distribution of settlements at the territorial level, the following analysis and calculations were performed.[54]

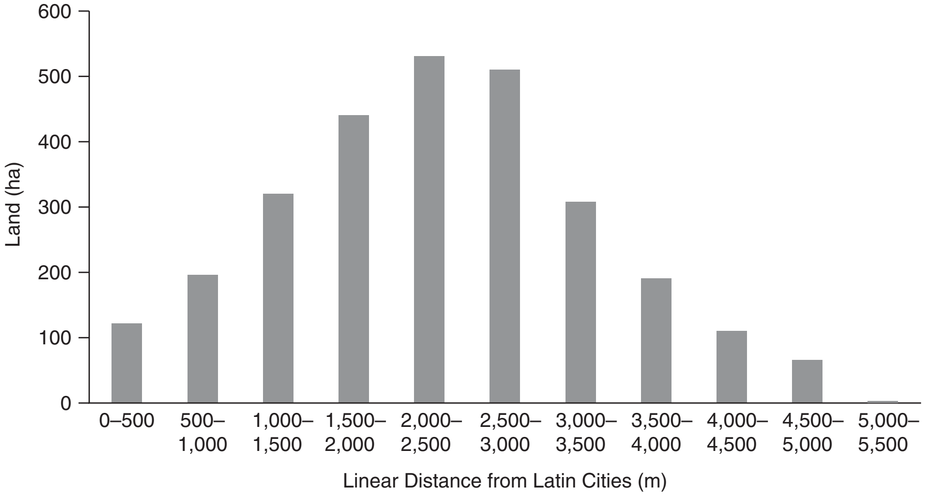
Firstly, the distances between Archaic Latin cities (i.e., settlements larger than 20–25 ha) were measured (Table 21). Then the distribution of land, according to the distance from settlements of different hierarchical levels ('cities' and 'villages'), was measured and plotted in histograms. Figure 65 shows that during the Orientalizing Age no area was more than 5 km from urban centres and most of the land was within a distance of 1.5–3 km from them. Remote areas, more than 3.5 km distant from urban centres, are rare and represent very small portions of the whole territory within the sample area (13%). The land distribution according to distance from villages A (more than 1 ha and less than 4 ha) and from villages B (more than 1,000 m^2 but less than 1 ha) shows that there is no land more than 3.5 km from a village and the majority of lands lie within 1–2 km of one (Fig. 66).

Finally, the distribution of lower-order settlements in relation to higher-order settlements was analysed. Firstly, the linear distance, respectively from cities, villages A and villages B, was calculated. Then the distribution of villages A in relation to the distance from cities, of villages B in relation to the

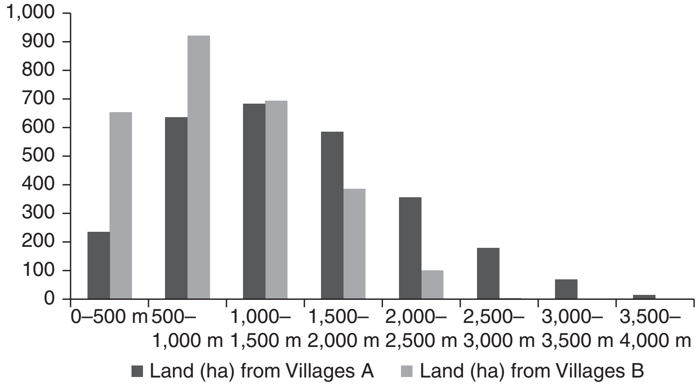
Table 21. Distance between Latin cities, Orientalizing and Archaic Ages

	Crustumerium	Fidenae	Casale Capobianco
Crustumerium	0	6	8
Fidenae	6	0	8
Casale Capobianco	8	8	0

Note: Distances are given in kilometres.

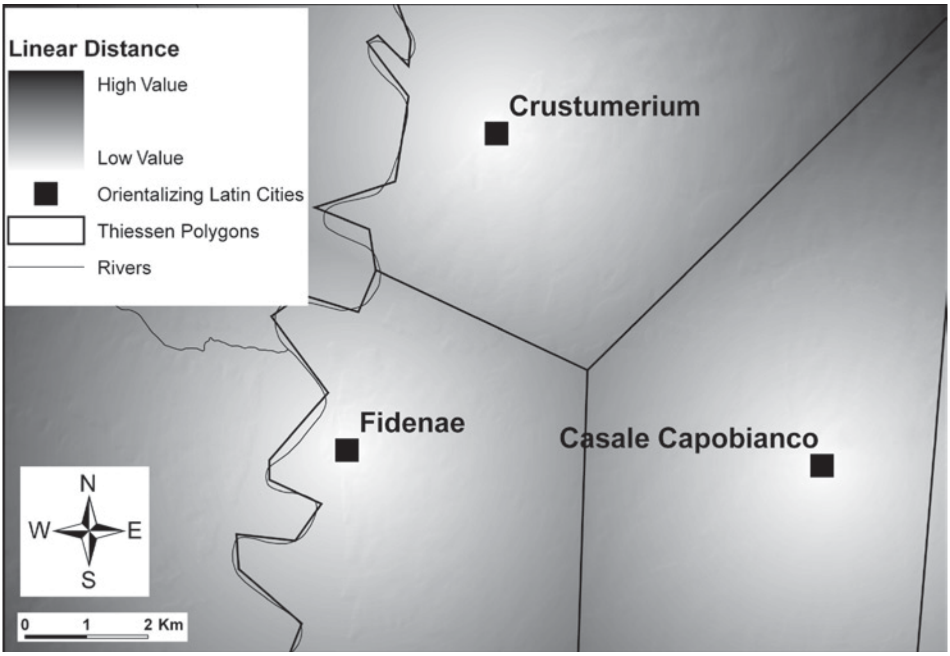


65. Territorial sample: land distribution according to distance from Orientalizing and Archaic Age Latin cities (more than 20–25 ha).



66. Territorial sample: land distribution according to distance from Orientalizing Age Latin villages (villages A, more than 1 ha and less than 4 ha; villages B, more than 1,000 m^2 and less than 1 ha).

distance from villages A and of generic sites in relation to the distance from villages B and from all settlements of a higher level (cities and villages A and B) was calculated. The linear distance from cities and villages was calculated as



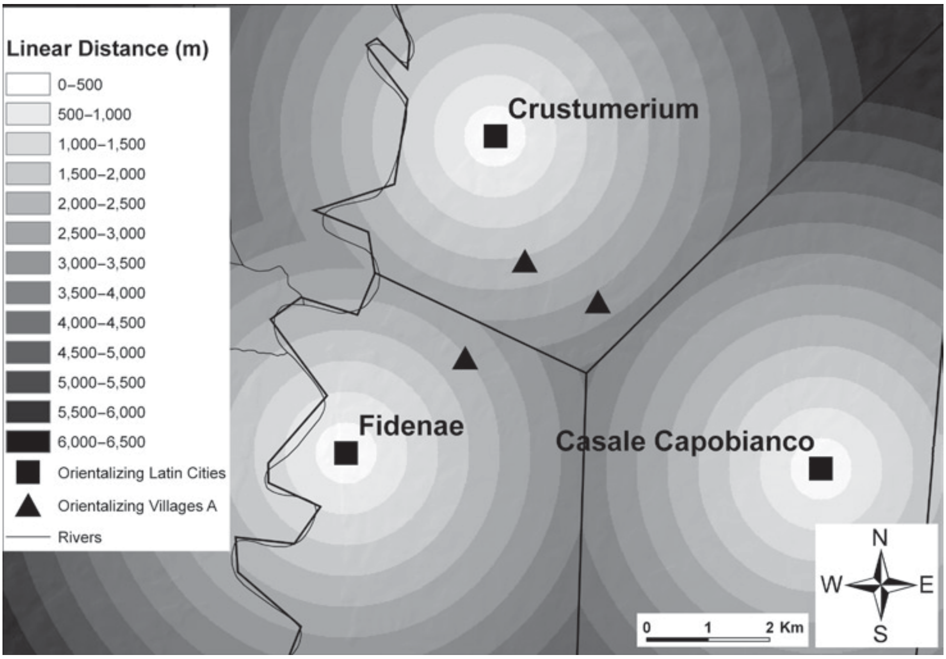
67. Territorial sample: linear distance from Orientalizing and Archaic Age Latin cities (more than 20–25 ha).

a continuous raster surface (GRID). Then the continuous GRID surface was reorganised according to buffer zones of 500 m each (Figs. 67 and 68).

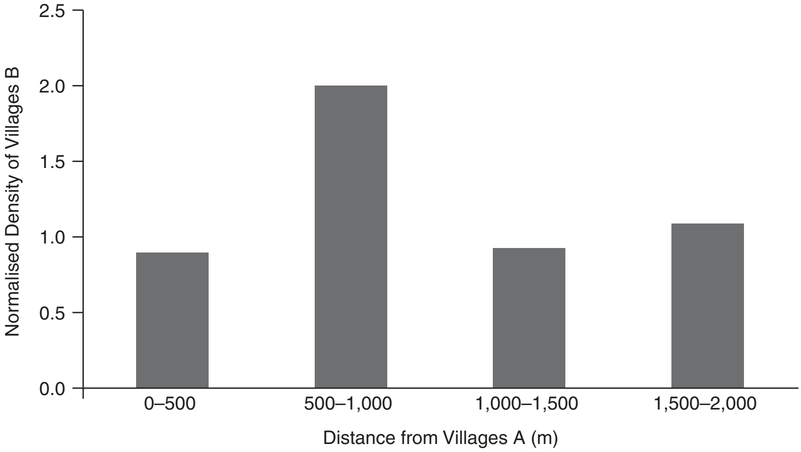
The association of sites with different distances was analysed according to the methodology and calculations presented in Section A2.2 of the appendix. As shown in Figure 68, two of the three villages A identified in the sample area are located at a distance of 2–2.5 km from the cities, and one is between 3 and 4 km from them. The analysis of the location of villages B in relation to the distance from cities and from villages A shows that, if the frequency of sites is normalised against the area of land available in a defined distance range, the highest normalised density of villages B is between 0.5 and 1 km from villages A (Fig. 69) and between 1 and 2 km or between 3 and 4 km from cities (Fig. 70).[55]

The analysis of the location of generic sites (houses/farmsteads, etc.) in relation to villages B shows that the highest normalised density of generic sites is within a radius of 1 km from villages B, and no local site is within a radius of more than 1.5 km from villages B (Fig. 71). If site location is calculated in relation to villages B, together with villages A and cities, the higher density of local sites within a radius of 1 km from higher-order settlements is even more evident (Fig. 72).

If the results from the preceding analyses and calculations are summarised in a schematic representation of the location of Orientalizing sites at different

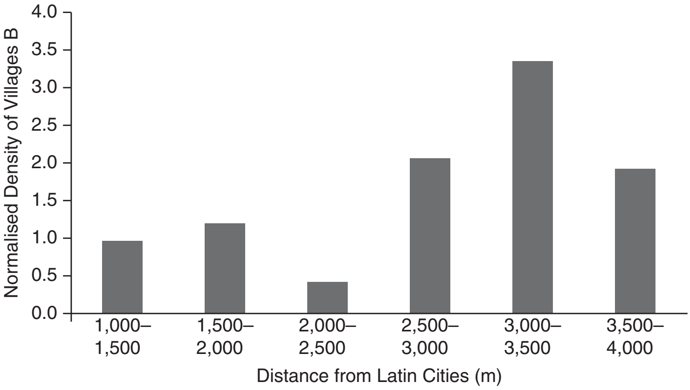

Linear Distance (m)
0–500
500–1,000
1,000–1,500
1,500–2,000
2,000–2,500
2,500–3,000
3,000–3,500
3,500–4,000
4,000–4,500
4,500–5,000
5,000–5,500
5,500–6,000
6,000–6,500
Orientalizing Latin Cities
Orientalizing Villages A
Rivers
Crustumerium
Fidenae
Casale Capobianco
N
W
E
S
0
1
2 Km

68. Territorial sample: linear distance from Orientalizing and Archaic Age Latin cities (more than 20–25 ha), reorganised according to buffer zones of 500 m each.

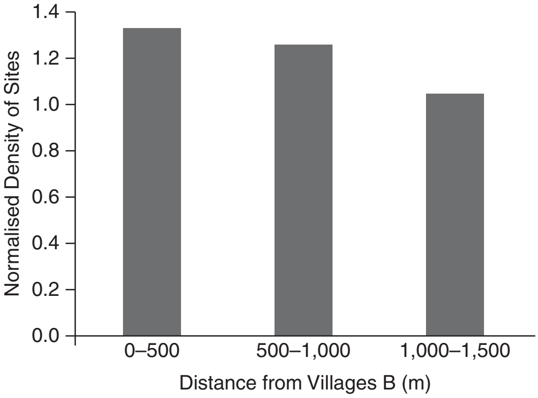


69. Territorial sample: density of Orientalizing Age villages B (more than 1,000 m² and less than 1 ha) in relation to distance from villages A (more than 1 ha and less than 4 ha).

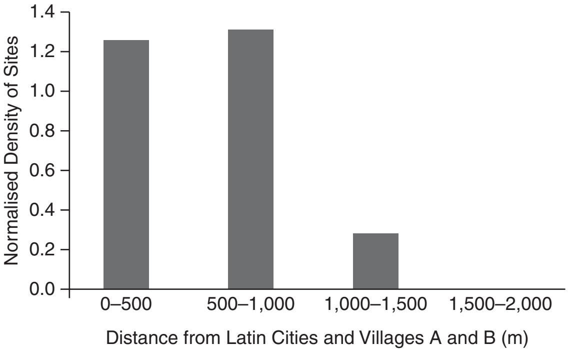
hierarchical levels, a pattern appears, which is shown in Figures 73 and 74. The analyses performed for the Orientalizing Age were repeated for the Archaic Age and showed the same settlement pattern, but with a higher statistical confidence (cf. calculations in Section A2 of the appendix). Figures 73 and 74 show that, within the sample area, Latin cities (Crustumerium, Fidenae and Casale Capobianco) are about 6–8 km from one another, with an average



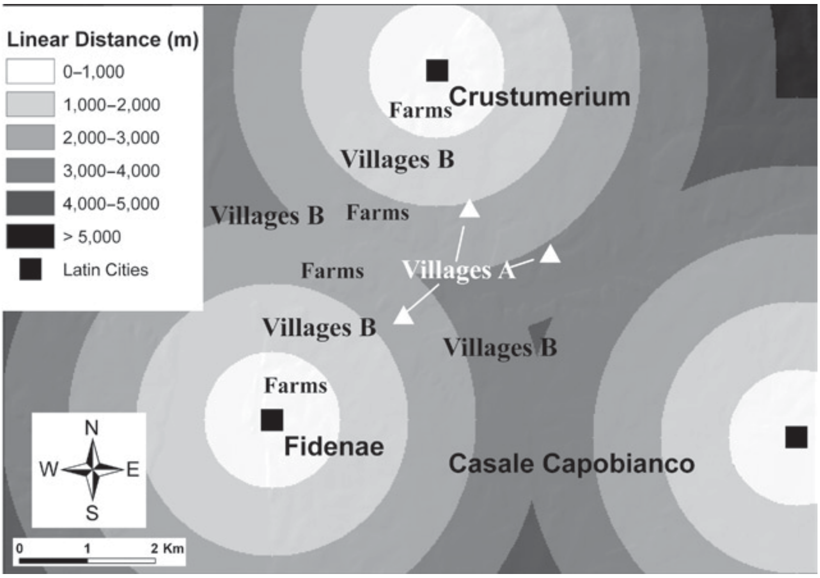
70. Territorial sample: density of Orientalizing Age villages B (more than 1,000 m² and less than 1 ha) in relation to distance from Latin cities (more than 20–25 ha).



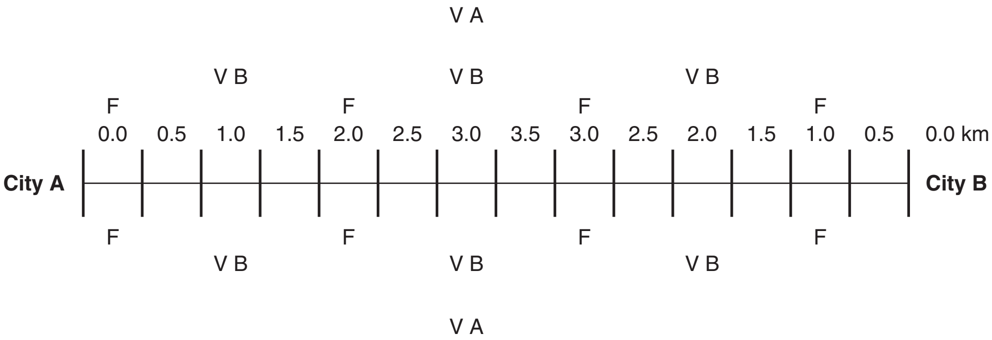
71. Territorial sample: density of Orientalizing Age sites in relation to distance from villages B (more than 1,000 m² and less than 1 ha).



72. Territorial sample: density of Orientalizing Age sites in relation to distance from cities and villages (A and B) considered together.


Linear Distance (m)
0–1,000
1,000–2,000
2,000–3,000
3,000–4,000
4,000–5,000
> 5,000
Latin Cities
Crustumerium
Farms
Villages B
Villages B
Farms
Farms
Villages A
Villages B
Villages B
Farms
Fidenae
Casale Capobianco
N
W
E
S
0
1
2 Km

73. Territorial sample: Orientalizing and Archaic Age settlement distribution.


V A
V B
V B
V B
F
F
F
F
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0 km
City A
City B
F
F
F
F
V B
V B
V B
V A

74. Territorial sample: schematic representation of the Orientalizing and Archaic Age settlement distribution. V A, village A; V B, village B; F, farmstead.

territorial radius of about 3–4 km. In addition, villages A are located at about the midpoints between cities, which additionally reduces the quanta to a radius of 1.5–1.75 km.

This settlement distribution seems to correspond to the final stage of the fission dynamic of settlements described by John Bintliff and discussed in Section 1.2. In particular, this stage would represent an unstable equilibrium due to a lack of resources and/or overpopulation pressure, which derives from the degeneration of a mature settlement system that is normally stable at a radius of 2–3 or 3–4 km.[56] In fact, if considered diachronically, the settlement of Casale Capobianco appears only by the end of the Early Iron Age and beginning of the Orientalizing Age, and the distance between Crustumerium and Marco Simone Vecchio-Ficulea, the next-nearest long-term city to the south-west, is about 10.5 km, which leads nicely to the original radius of 5–6 km predicted by site catchment analysis for a mature and stable settlement system.[57]

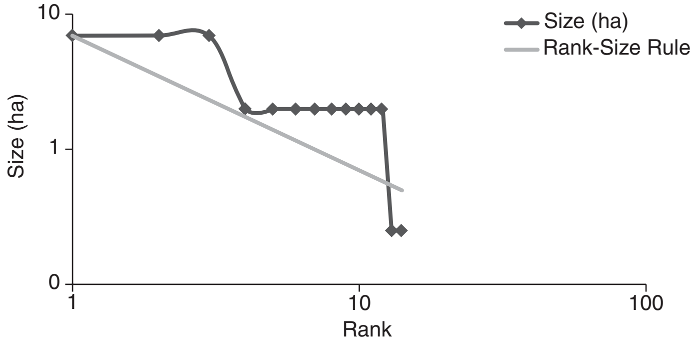
The unconventionally short distance between Fidenae and Crustumerium (about 6 km) and between these and Rome (Crustumerium is about 15 km from Rome, and Fidenae lies at about the midpoint between them) might have different explanations. Firstly, the Anio River (Fiume Aniene), which flows to the south of Fidenae, might have constituted a strong physical barrier between this city and Rome. Or perhaps Fidenae was dependent on Crustumerium or Rome (or both Fidenae and Crustumerium were dependent on Rome). Or, finally, the location of Crustumerium (as in the case of Rome) might have been influenced by the fact that a good ford there provided a favourable passage to Etruria.[58]

Finally, the location of villages B (larger than 1,000 m^2 and smaller than 1 ha) at about 1.5 km from the city and of villages A (larger than 1 ha and smaller than 4 ha) at about 2.5 km from it, that is, within the minimum 2- to 3-km radius predicted by an efficient use of the land (under a regime of intensive agriculture), seems to indicate an integration of urban and rural societies, perhaps with a dependency element, as argued by Nicola Terrenato for the territory of Volterra in Etruria.[59] To conclude, settlement distribution during the Orientalizing and Archaic Ages in this portion of the Roman *suburbium* (corresponding during earlier times to the territory between Crustumerium, Fidenae and Ficulea) seems to obey economic principles and logistics, such as the efficiency of cultivation.

In addition, the distance between Latin cities (about 9–10 km between Crustumerium and Ficulea and about 15 km between Crustumerium and Rome, with Fidenae unconventionally interspersed, as noted earlier) could suggest that these centres functioned as central places and possibly markets, collecting surpluses and labourers from all lower-order settlements. Thus it is plausible that a market dynamic might have been superimposed on the original pattern based on land-use efficiency, but exactly when this happened remains a matter of debate (cf. Section 6.4 with discussion of locational models, including central place theory, at the regional level).

Rank-Size Analysis

Sizes of large settlements within a settlement pattern have been empirically observed to follow a regular pattern, which is known as the rank-size rule. This rule, which will be illustrated in more detail in 'Rank-Size Rule' in Section 6.3, states that within an homogeneous and correctly defined region, which has an ideal hierarchy and integration among settlements, the size of the second-largest



75. Territorial sample: Bronze Age rank-size graph.

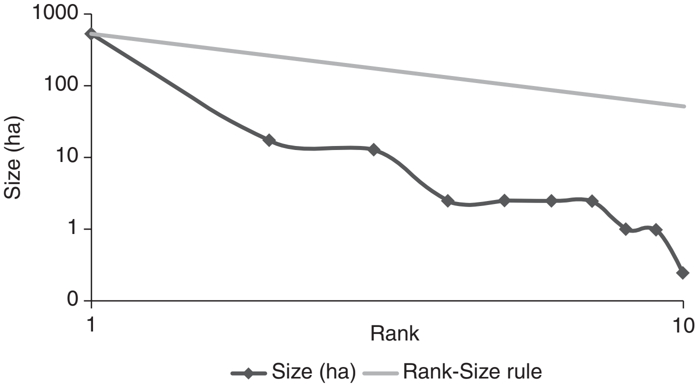
settlement should be half that of the largest settlement, the size of the third-largest settlement should be one-third that of the largest and so on.

This ideal situation plotted on a logarithmic scale with the rank on the x axis and the size of settlements on the y axis is represented by a line with slope -1. Two deviations from the model are possible: a 'convex' curve, when the largest settlement is smaller than expected (typical of a non-state society with a low level of integration among settlements), and a 'concave' curve, when the largest settlement is unexpectedly large (generally associated with imperial or colonial systems).[60]

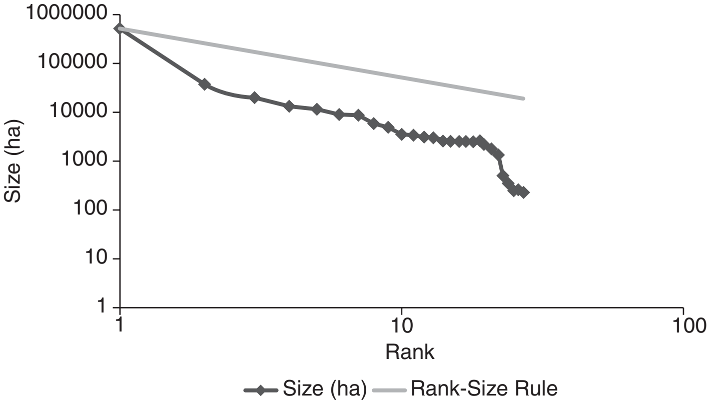
The rank-size rule is generally applied at the regional level,[61] but there have been a few attempts to apply it to survey data which include evidence of settlements smaller than 1 ha. In particular the rank-size rule has been applied by Perkins to the Albegna Valley Survey sample and by Laxton and Cavanagh to the Laconia Survey sample,[62] both of which cover almost the same time span as the present work. The rank-size rule has never been applied to survey data in Latium vetus at the territorial level; therefore, it is particularly interesting to repeat the experiment with the Suburbium Project sample and to compare the results with those of the analysis conducted at the regional level (Section 6.3).

The rank-size graph plotted from the Suburbium Project sample data (Fig. 75) shows for the Bronze Age a double-convex curve (which has a steplike appearance), and the calculation of the rank-size index gives a value close to log-normal (0.288) (see Fig. 82). According to Steven E. Falconer and Stephen H. Savage, the double-convex curve may result from a central place–like site distribution or from an incorrect identification of the boundaries of a region.[63] However, because the rank-size index indicates a high level of settlement integration, the first explanation seems more plausible.

This might mean that, during the Bronze Age at the local level, there is a quite well developed level of integration and some sort of 'hierarchical' organisation, even though at the regional scale there is not yet a well-defined settlement hierarchy (cf. Chapter 6). As suggested by Renato Peroni and Francesco



76. Territorial sample: Early Iron Age rank-size graph.

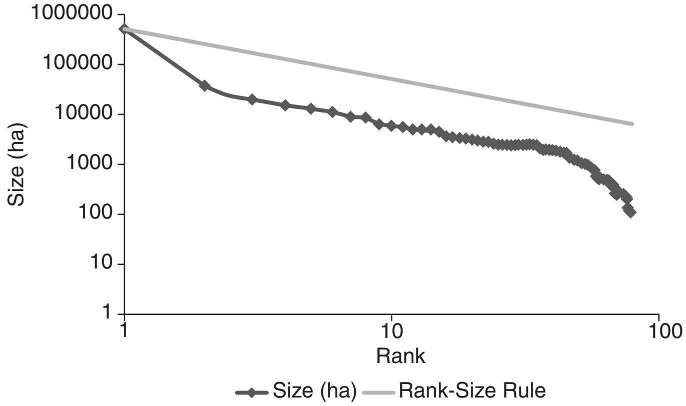


77. Territorial sample: Orientalizing Age rank-size graph.

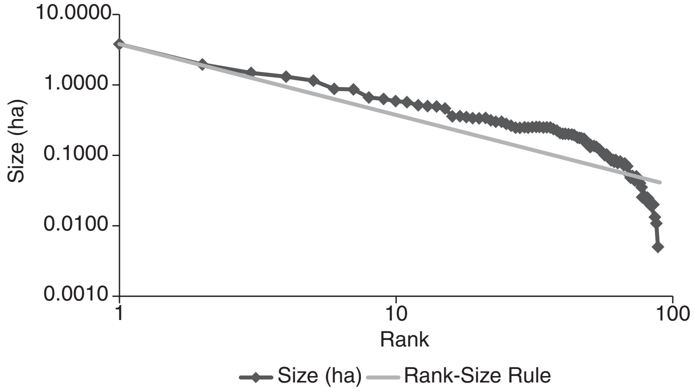
di Gennaro,[64] several analyses conducted in the present study provide further clues for the likelihood that at this time an incipient two-level hierarchy can be distinguished between settlements larger and smaller than 6 ha (cf. Chapter 4, Fig. 34, with the Final Bronze Age 3 settlement size-frequency histogram).

For the Early Iron Age, the Orientalizing Age and the Archaic Age, if Latin cities (Crustumerium, Fidenae and Casale Capobianco) are included in the analysis, the curve is concave, with a long tail in the 'primate' section of the graph (Figs. 76, 77 and 78, respectively). This tendency towards a 'primate' curve during these phases is confirmed by the values of the rank-size index (cf. graph in Fig. 82). This pattern is easily explained by the fact that in this area 'minor centres', that is, centres between 4 and 20–25 ha, which occupy a position in the regional settlement hierarchy between cities (more than 20–25 ha) and villages A (between 1 and 4 ha), are missing.

In the Early Republican Period the curve of the rank-size graph again starts to have a log-normal distribution, stretching towards convexity (Fig. 79). Then, the curve increases even more towards convexity during the Middle



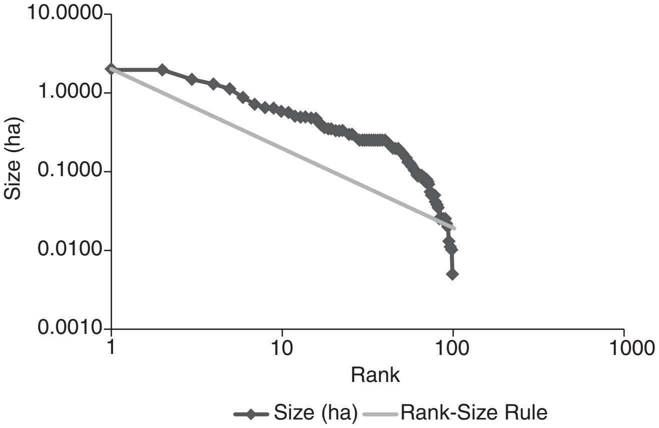
78. Territorial sample: Archaic Age rank-size graph.



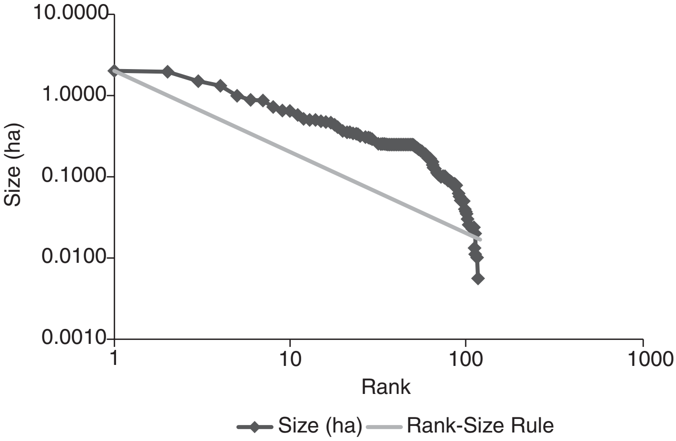
79. Territorial sample: Early Republican Period rank-size graph.

and Late Republican Periods (Figs. 80 and 81, respectively). This trend is confirmed by the values of the rank-size index, which for the Early, Middle and Late Republican Periods indicate values rising towards an increased convexity of the curve (Fig. 82). Values indicating an increase in convexity during the Archaic Age and Republican Period are consistent with the process of de-urbanisation and ruralisation of Crustumerium, when this city was conquered by Rome (500/499 BC) and its land was annexed to the Roman territory and distributed among new colonists.[65]

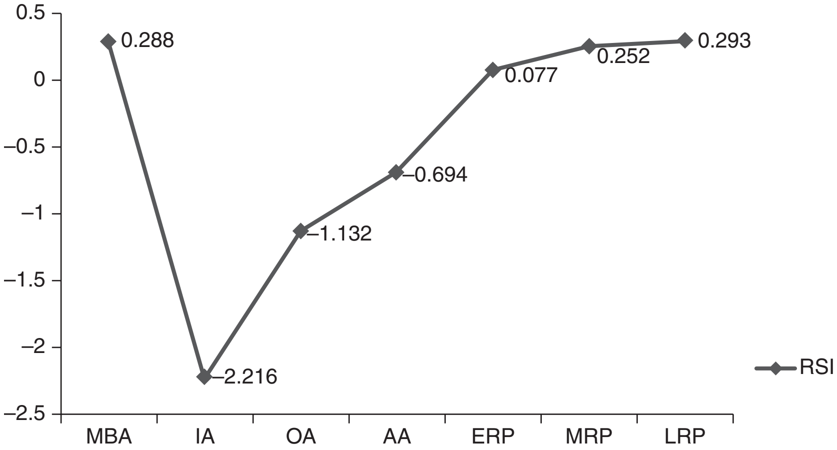
As confirmed by surveys, by the late Archaic Age and the Republican Period, Crustumerium no longer exists as a separate entity, and the settlement area is occupied by villas and rural sites.[66] The gradual trend towards higher convexity during the entire Republican Period seems to be consistent with the traditional view about the gradual rationalisation and concentration of land property in larger estates at the expenses of small properties, which, as noted earlier, introduced important transformations in the Roman rural landscape[67] and eventually led to the agrarian crisis of the second century BC.[68]



80. Territorial sample: Middle Republican Period rank-size graph.



81. Territorial Sample: Late Republican Period rank-size graph.



82. Territorial sample: rank-size index trend.

As discussed earlier in the sub-section 'Settlement History', this perspective also seems to be confirmed by a closer analysis of the sites clearly identified as villas in the Late Republican Period, but with materials of earlier phases, and the quantitative comparison between the evolution through time of sites of this type and small houses/farmsteads.[69] However, it has also been suggested that there are a number of issues that should be taken into account, and other possible explanations. Firstly, site density for the sample area under study seems to be too high to allow for a great number of very large estates.[70] Secondly, the lack of information about the juridical status of land parcels makes it very difficult to establish whether small houses/farmstead are actually small properties or simply parts of larger estates, allocated to more or less permanent tenants.[71] Finally, the rise in the number of villas and the decrease in the number of farmsteads could be related to a cultural choice as well as to a purely economic explanation.[72]

5.5. CONCLUSIONS

Settlement patterns were investigated in a sample area of the territory around Rome that was particularly favourable for the study in that it is a well-defined morphological area (half of a hydrographical basin) with an interesting historical development, which has been intensively surveyed and studied in the past few decades. The location of the sites was analysed with reference to a few physical characteristics of the landscape (geology, altitude, slope and distance from modern rivers; Section 5.3) and hierarchical patterns were investigated with locational models (settlement hierarchical distribution and rank-size rule; Section 5.4).

The analysis of site distribution over time confirms some general trends already observed in other studies based on survey data, but it also shows some discrepancies that might promote further discussion. In particular, a general decrease in the number of sites from the Bronze Age to the Early Iron Age is consistent with the theory of settlement nucleation and centralisation, which led to the formation of large proto-urban centres later occupied by Archaic cities. Moreover, the exponential growth in the number of sites (most of which were new occupations) during the Orientalizing Age seems to confirm the idea of a 'colonisation' of the countryside, which was led by the aristocracy of the newly formed large nucleated urban settlements (eighth century BC).

The supposed Etruscan/Latin crisis of the fifth century BC is not borne out by the evidence in the sample area under study. Data related to the territorial sample area seem to show a delay in the growth rather than an evident decrease in the number of sites. A closer comparative analysis between sites identified as villas in the Late Republican Period and sites identified as simple houses/farmsteads also suggests some interesting points of discussion on the origin of the villa and its development during the Republican Period.

Firstly, the analysis shows that there is a marked increase in the number of sites which will develop into villas during the Orientalizing and Archaic Ages. Almost half of these settlements (which were either farmsteads or small villages) became villas in the Late Republican Period. This pattern could confirm the idea, suggested by recent excavations in the territory of Rome (Auditorium), that the origin of the villa dates back to at least the Archaic Age.[73] Secondly, the diminishing number of new farmsteads from the Archaic Age until the end of the Republican Period and the dramatic increase in the number of new villas might be related to the development of larger estates at the expense of small properties, which could have led to the agrarian crisis of the second century BC. However, as discussed earlier and briefly summarised later, this interpretation has to be considered carefully in the light of a number of biases and possible alternative explanations.

The analysis of site location in relation to physical characteristics of the landscape shows, in relation to geology, a generalised high degree of association with tuff soils and colluvial and alluvial soils, which are commonly considered good agricultural soils. An increasing trend can be observed in the association with alluvial and colluvial soils and a decrease in the association with clay soils. The first trend, combined with the progressive occupation of higher locations from the Orientalizing Age onwards, and particularly during the Late Republican Period, might be explained in terms of progressively intensified land exploitation for agricultural purposes. The lower association with clay deposits might imply changing modes of production and the redefinition of craft-production locations in relation to raw material deposits. Finally, the strong association with modern rivers confirms the importance of the availability of water resources, both for survival and probably for transport.

Another interesting but peculiar point which emerged from the analysis is the increased density of sites more than 20 minutes' walking distance away from rivers during the Orientalizing Age onwards, exactly in parallel with the appearance in southern Etruria and Latium vetus of a more organised drainage system (*cuniculi*), although it is difficult to establish whether this is simply a coincidence or a cause and effect relationship.

The application of the rank-size rule shows that at the territorial level an incipient two-level hierarchy is already present during the Bronze Age. During the Early Iron Age, Orientalizing Age and Archaic Age, by contrast, the rank-size graphs and the rank-size index indicate values normally defined as 'primate' curves, which are considered typical of imperial systems. This trend in the rank-size curve is probably due to the fact that within the limits of the sample area, no 'minor centre' is known. Thus this unusual pattern at the local level might be caused by the lack of intermediate centres between the hierarchical level of 'cities' and 'villages'.

The trend in the curve towards higher convexity from the Archaic Age to the end of the Republican Period is consistent with the process of de-urbanisation and ruralisation of the conquered territory around Rome. It seems also to be consistent with the increase in the number of villas, or of sites which will become villas, in the Late Republican Period and the decrease in the number of new houses/farmsteads.

This last phenomenon is particularly evident in the Middle and Late Republican Periods and might be related either to the historical theory that an agrarian crisis occurred in the second century BC or, more likely, to important transformations in the agrarian landscape between the third and second centuries BC.[74] In any case, as discussed previously, the high site density of the sample area under study, the lack of knowledge about the juridical status of land parcels and the recent interpretation of villas as cultural/ideological phenomena rather than as pure economic/production sites does not allow for a simple justification but leaves the door open to a number of alternative explanations.

The analysis of the spatial location of settlements at the different levels of the hierarchy showed that, during the Orientalizing and Archaic Ages, settlement distribution seems to repeat a specific settlement dynamic, which Bintliff identified in several geographical and historical contexts corresponding to land-use efficiency principles. According to this model, the original 5- to 6-km radius predicted by site catchment analysis for farming societies under the pressure of natural demographic growth tends to reduce to a radius of 3–4 or 2–3 km with the foundation of new villages in between older settlements. This could have happened in a natural way, with no great difficulty or stress for the communities involved.[75]

This could be shown in the case of Crustumerium and Ficulea, with the later foundation of Casale Capobianco roughly at the midpoint of the distance between the two, which is archaeologically evident only from the late Early Iron Age and the beginning of the Orientalizing Age. A further reduction in the distance among major settlements is produced by the interspersing of villages A in between larger Latin cities (Orientalizing and Archaic Ages). This brings the territorial radius of the settlement catchment area in the sample territory to 1.5–1.75 km, which represents the final development of the settlement dynamic hypothesised by Bintliff. At this point a critical equilibrium is reached between potential resources and population density, which could result in a lack of resources and/or stress from overpopulation.[76]

SIX

THE REGIONAL LEVEL: SETTLEMENT PATTERN ANALYSIS IN LATIUM VETUS FROM THE BRONZE AGE TO THE ARCHAIC AGE

6.1. INTRODUCTION

In the past twenty years scholars have proposed a number of settlement patterns for Latium vetus on both local and regional levels.[1] One of the main issues and background themes of all these studies is the keenly debated question of settlement evolution from Bronze Age villages to the cities of the Archaic Age. The present work aims to contribute to this debate, using a landscape approach focused on the territory of Rome and the surrounding region from the Bronze Age to the Archaic Age.

In the preceding chapters, the city (Chapter 3) and its territory (Chapters 4 and 5) (micro-scale) were analysed by means of GIS tools and a number of locational models to investigate the data. This chapter discusses analyses conducted at the regional level (macro-scale). Section 6.2 focuses on the relationship between settlement patterns and the environment. In particular, site distribution is examined in relation to environmental variables (geology, elevation, slope and distance from modern rivers) in order to discern general patterns in the settlement strategies of Bronze and Early Iron Age Latium vetus.[2] The following sections (6.3, 6.4 and 6.5) present and apply some locational models (rank-size rule, spatial efficiency model, central place theory and Voronoi diagrams) to define settlement hierarchy and potential regional political patterns. As discussed in Section 2.4 both quantitative analysis and locational models, although strongly criticised for their determinism and simplification of reality, can still provide useful frameworks for the analysis and interpretation of archaeological eivdence, especially when they are evaluated against different types of evidence and independent lines of argument.[3]

6.2. SETTLEMENT PATTERNS AND ENVIRONMENTAL VARIABLES

Geology

The association between sites and geology was examined by means of site catchment analysis. According to Bintliff's carrying capacity model,[4] corrected for population density as suggested by Cardarelli,[5] a Bronze Age settlement of about 6 ha would have been sustained by a territory of about 2- to 3.5-km radius, while an Early Iron Age settlement between 30 and 40 ha would have required a territory with a radius of between 3 and 6 km.[6] Therefore, catchment areas, or 'buffer zones' (circular areas), of 2 km for Bronze Age settlements and 5 km for Early Iron Age settlements were created with the specific function common in most GIS applications. These annular buffer zones were then used to cut the geological layer in order to identify the rock types in the catchment area of each settlement.

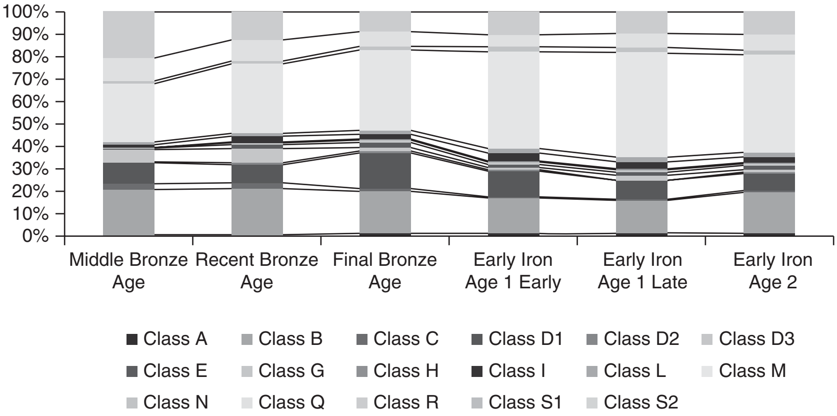
Subsequently, the distribution of rock types within the buffered areas was normalised in relation to the total land included within the buffers. The total area of each rock type within the buffer zones (sum of the single areas for each rock type within each buffer) was divided by the total land in these zones (sum of all rock type areas). The analysis, presented in Figure 83, shows that in all chronological phases three main soil types seem to be preferred: (1) alluvial and colluvial soils (class B); (2) sand deposits (class D2); and (3) volcanic and porous tuff soils (class Q) (for a definition of rock types see Table 22).

Alluvial-colluvial and sand deposits are important agricultural soils; sand deposits, in particular, can be important shallow groundwater reservoirs (aquifer). Volcanic and porous tuff soils are excellent for the production of wine and oil, especially combined with the mild Mediterranean climate of this area. In addition, porous soils are good water-holding terrains; they retain water during the dry season, enabling farmers to obtain up to three crops per year. Not surprisingly, settlements are constantly associated with the best and most productive agricultural soils.

The graph also shows that lithoid tuff (class S1) and other tuff soils (class S2) are quite common. This is possibly due to the fact that tuff hills and plateaux were generally preferred, from the Bronze Age onwards, for stable nucleated settlements. If geological variables are considered individually (Fig. 84) it becomes clear that volcanic and porous tuff soils (class Q) show a general increase from the Bronze Age to the Early Iron Age, while alluvial and colluvial soils (class B) decrease. It would be interesting to investigate whether

Table 22. Latium vetus rock types

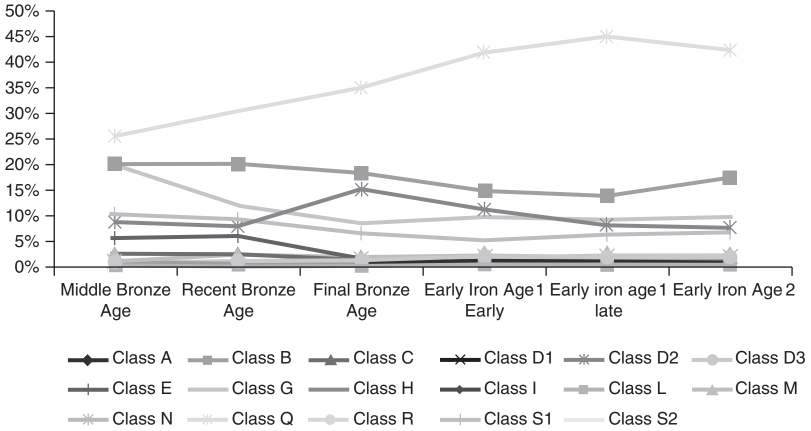
Class	Rock type
A	Organic soils
B	Alluvial and colluvial soils
C	Travertine
D1	Gravel deposits
D2	Sand deposits
D3	Coastal, lake and dune sands
E	Clay deposits
G	Calcarenitic, organic or clay-limestones and marls
H	Marly clay
I	'Scaglia' formation (marly limestone)
L	Marls, calcareous marls and dolomitic limestones
M	Majolica, marly and selciferous limestone
N	Cavernous limestone
Q	Volcanic *scoria*, *lapilli* and *pozzolana*
R	Volcanic rock
S1	Lithoid Tuff
S2	Stratified tuff, *tufiti* and tuff soils



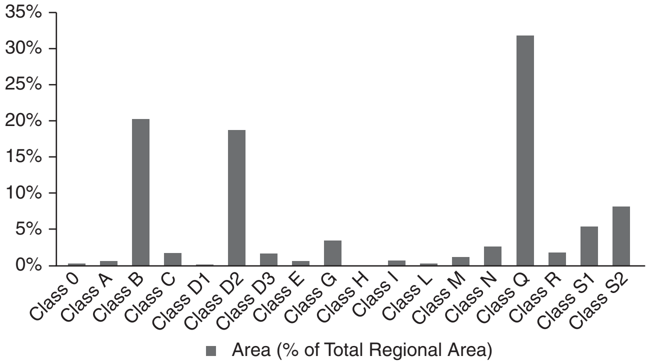
83. Latium vetus: rock type distribution in a catchment area of 2 km for Bronze Age and 5 km for Early Iron Age settlements. For rock type definitions see Table 22.

this change is connected with any parallel variation in the type of agricultural production.[7]

If the distribution of rock types is compared with the land distribution of each rock type within the limits of the regional area (Fig. 85), some additional interesting results are obtained. The graph shows that the rock types identified as preferred (alluvial and colluvial soils, class B; sand deposits, class D2; and volcanic and porous tuff soils, class Q) are actually the most common in the area. This is not surprising, because, as emphasised in the geographical presentation of the region (see Section 2.1), Latium is well known as a fertile land, rich



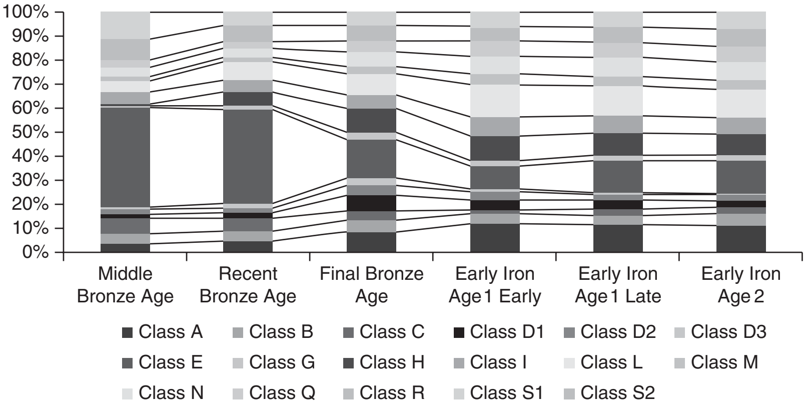
84. Latium vetus: rock type (single variable) distribution in a catchment area of 2 km for Bronze Age and 5 km for Early Iron Age settlements. For rock type definitions see Table 22.



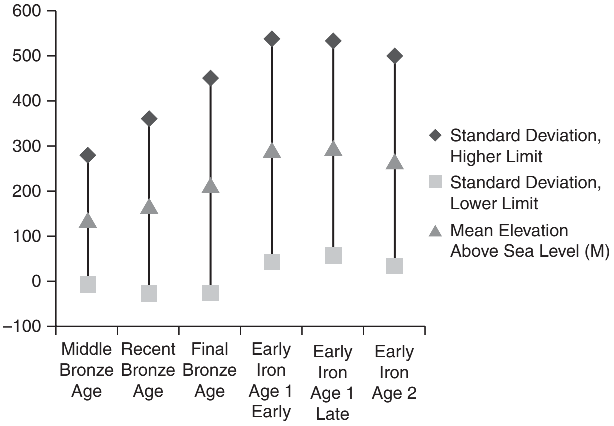
85. Latium vetus: normalised land distribution according to rock type. For rock type definitions see Table 22.

in water and favourable for permanent settlement and agricultural practices. Nevertheless, the trends observed in the choice of settlement locations by past inhabitants of Latium vetus over time reveal a non-random distribution (see Section A3 of the appendix, with chi-square test) and remain valid. In particular, the distribution of rock types within the buffer areas, normalised against the distribution of rock types within the region, highlights some interesting points.

The graph in Figure 86 shows a strong association between Bronze Age sites and clay deposits, which become progressively less important in later phases. This may indicate the greater importance of access to raw materials for pottery production in the older phases, when this activity is still practised in the village at the level of household on an occasional or seasonal basis by people normally involved in other activities. Given those conditions it is evident that the access to raw materials is much more important than it is in a more urbanised society when pottery production is carried out by specialised workshops.[8]



86. Latium vetus: rock type distribution in catchment areas normalised according to rock type distribution in the region. For rock type definitions see Table 22.

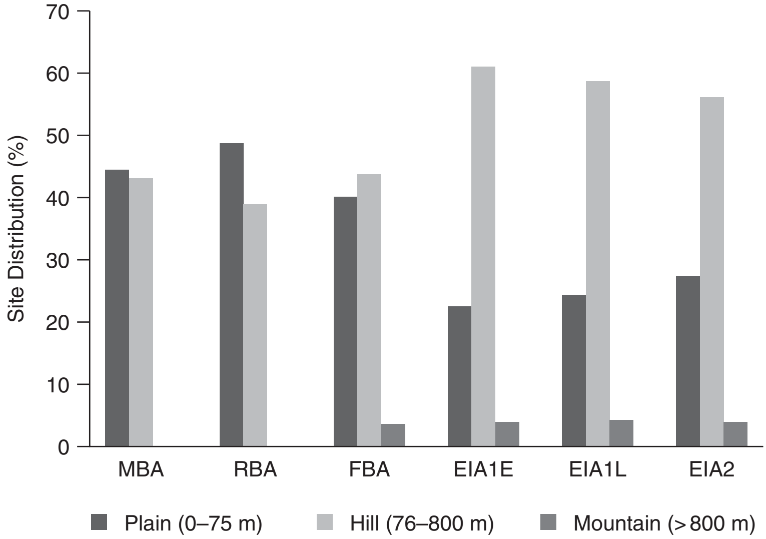


87. Latium vetus: site elevation trend.

Elevation and Slope

Analyses were performed on elevation and slope for both site location and settlement catchment areas. Site elevations were extracted from a digital elevation model (DEM)[9], with a resolution of 20 m,[10] using the 'Surface Tools' extension for Arc View 3.x produced by Jenness,[11] after which the mean elevation for each phase was calculated. Then the standard deviation of the mean elevations was calculated, and the graph in Figure 87 was obtained.

The graph shows that the deviation of the elevation of single sites from the mean value for each phase is quite high, and therefore the lower and highest tolerance limits (respectively light grey square and dark grey diamond) are very distant from the mean values (medium grey triangle). However, a general trend is still recognisable and seems to indicate a gradual increase in mean site elevation from the Middle Bronze Age until the beginning of the Early Iron Age,



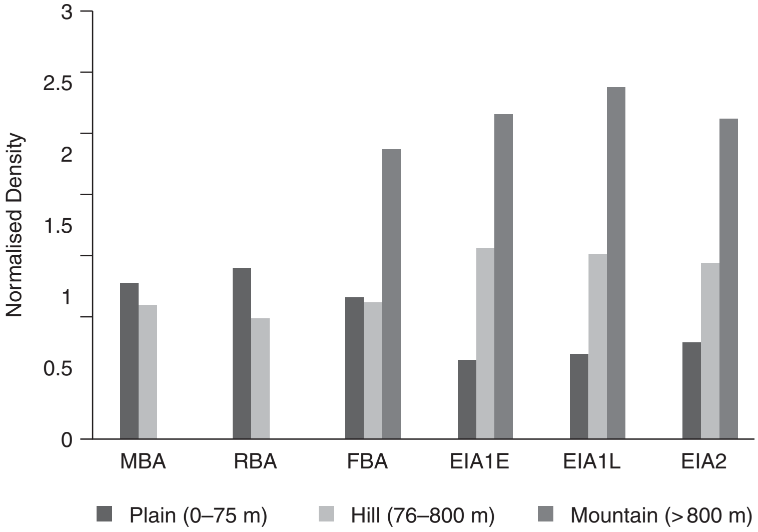
88. Latium vetus: site distribution according to elevation (above sea level).

followed by a more stable trend during this phase, except for a slight decrease at the end of the period.

The distribution of sites in relation to altitude was also analysed in order to determine whether there was any preference at various times for lower, open positions or higher, well-defended settlements. For this purpose three main classes of elevation were defined according to elevation above sea level: plain (0–75 m), hill (76–800 m) and mountain (above 800 m).

The DEM was adjusted according to the defined classes, and the association between them and the sites was analysed. Firstly, the percentage of sites for each class was calculated. This analysis, presented in Figure 88, shows that Bronze Age settlements are fairly evenly distributed between plain and hilltop locations. Subsequently, hilltop locations increased constantly from the Recent Bronze Age onwards and became dominant in the Early Iron Age.

The distribution of sites according to elevation was then normalised against the normalised land distribution according to elevation within the entire region of study. As usual, to calculate the normalised land distribution according to classes, the percentage of land of each class was calculated in relation to the total area of the region. The normalised density of sites according to elevation (Fig. 89) shows a pattern similar to that exhibited by the raw data. The only difference is a greater emphasis on the association between sites and very high elevation. The absolute frequency of mountain sites is not very high, but if these sites are considered in relation to the portion of mountain land available in the region, the association between sites and high elevation from the Final Bronze Age onwards becomes more significant.



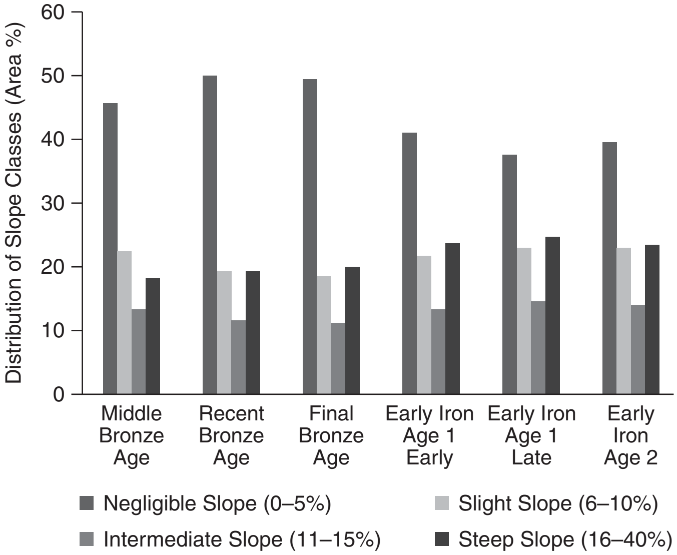
89. Latium vetus: normalised site distribution according to elevation (above sea level).

The association between sites and land slope (calculated as a percentage) was also analysed with the catchment area method. Four classes of slope were defined: negligible (0–5%), slight (6–10%), intermediate (11–15%) and steep (16–45%). The total area for each class was calculated as a percentage of the total area of the land included in the catchment areas. These values plotted in a histogram (Fig. 90) show that negligible slopes decrease from the Bronze Age onwards while steeper areas increase.

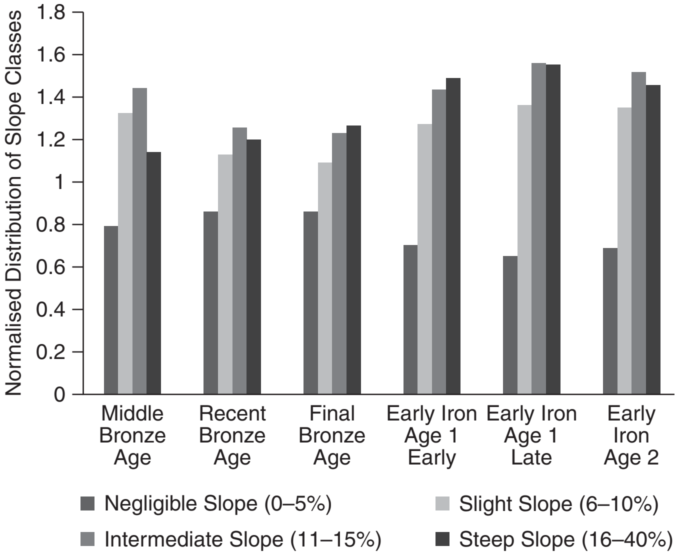
If land distribution according to slope within the catchment areas is normalised in relation to the total regional land distribution according to the same classes, the graph presented in Figure 91 is obtained. This graph identifies trends similar to the previous one (Fig. 90), such as a decreasing use of negligible slopes and an increase in steeper slopes, but it also adds some details. The normalised land distribution shows that the proportion of land with steeper slopes versus milder slopes within the catchment areas appears to be more significant when compared with the total land available within the region for each slope class. This trend is even more evident if the variation between each phase and the preceding one is calculated (Fig. 92). This pattern may indicate an improvement in agricultural techniques (e.g., the introduction of terracing) and/or a demographic increment with occupation of less accessible land.

Distance from Modern Rivers

The catchment model was also used to analyse hydrographical data. A cost surface based on walking time to rivers was calculated using parameters

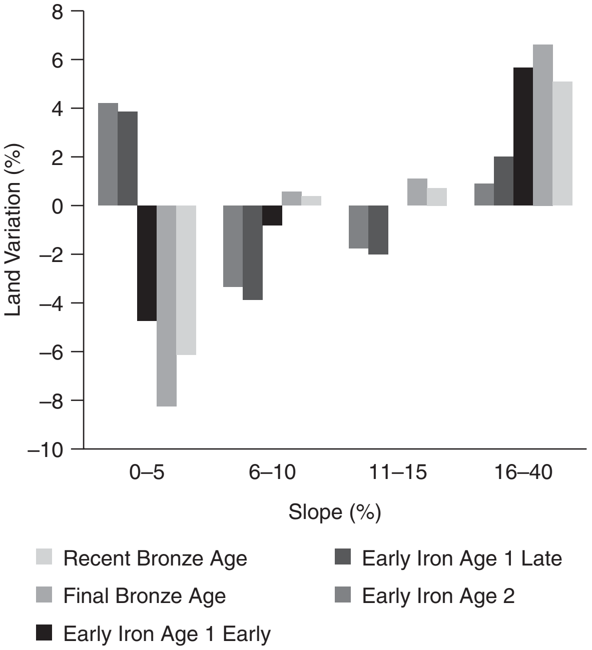


90. Latium vetus: land distribution in catchment areas according to slope.



91. Latium vetus: land distribution in catchment areas according to slope normalised against regional distribution.

provided in an unpublished study by Machovina[12] and applied by Rajala.[13] Land was classified according to walking time from rivers into three categories: 1.5 hours, 3 hours and more than 3 hours. Then, as with the other analyses, catchment areas were defined around each settlement (buffer zones, or circular areas, with a radius of 2 km for Bronze Age settlements and 5 km for Early Iron Age settlements) and the percentages of the different classes were calculated. The analyses showed that from the Bronze to the Early

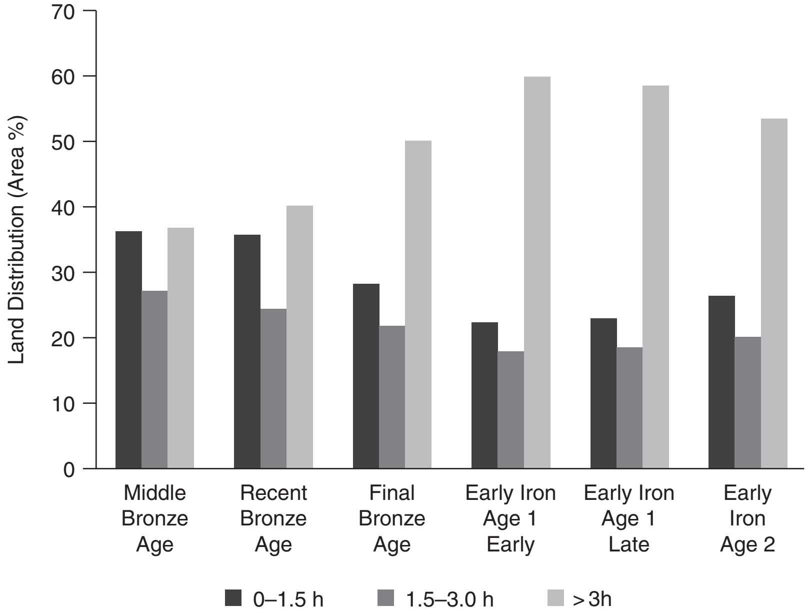


92. Latium vetus: variation of land occupation according to slope from one period to the following within catchment areas.

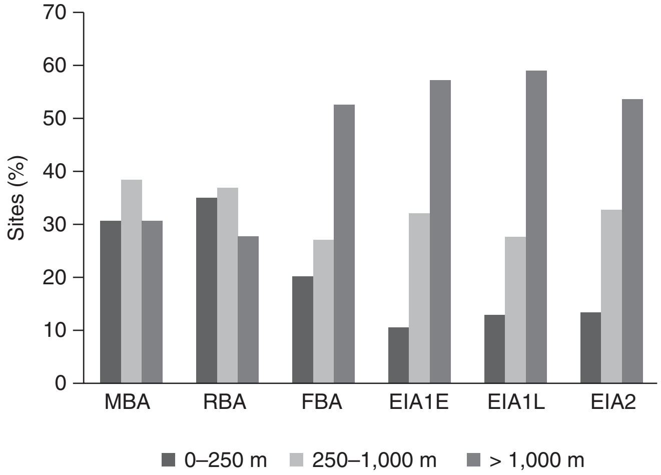
Iron Age, the proximity of land to water resources seems to be progressively less important for the choice of settlement locations (Fig. 93). A possible explanation for this pattern is that other factors became progressively more important or water supply techniques became more advanced. It could possibly be linked to the increased association of Early Iron Age sites with marls and calcareous rock types (types I, L and M; see Table 22 for a description of rock types and Figure 86 for a calculation of normalised rock type distribution within settlement catchment areas), which have better water retention properties.

The importance of river communication and its relationship to settlement location was further investigated. Rivers were classified as either associated (B1) or not associated (B2) with alluvial deposits. It is assumed that modern-day rivers associated with alluvial deposits are more likely to have been perennial rivers in antiquity as well and therefore important for middle- and long-distance communication.[14] Linear distances from rivers were calculated and grouped into three classes (0–250 m, 250–1,000 m and more than 1,000 m). The distribution of sites for each class (as a percentage) was calculated (Figs. 94 and 95).

The analysis showed that the association between sites and larger rivers (B1) seems to be more important for Bronze Age sites than Early Iron Age sites (Fig. 94). This may imply that fluvial communication or transport was less

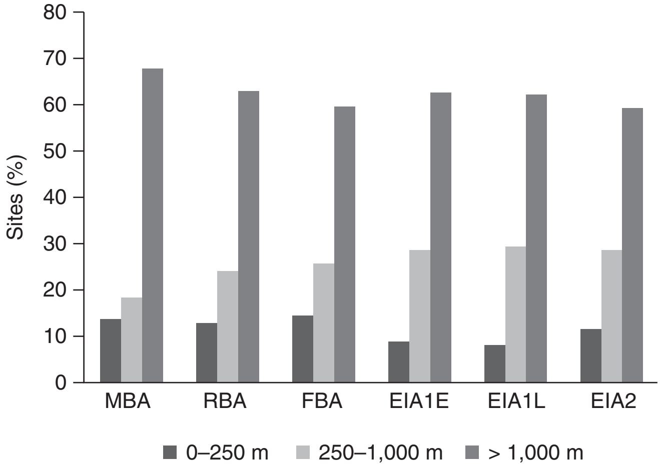


93. Latium vetus: land distribution in catchment areas according to walking distance (from modern rivers).

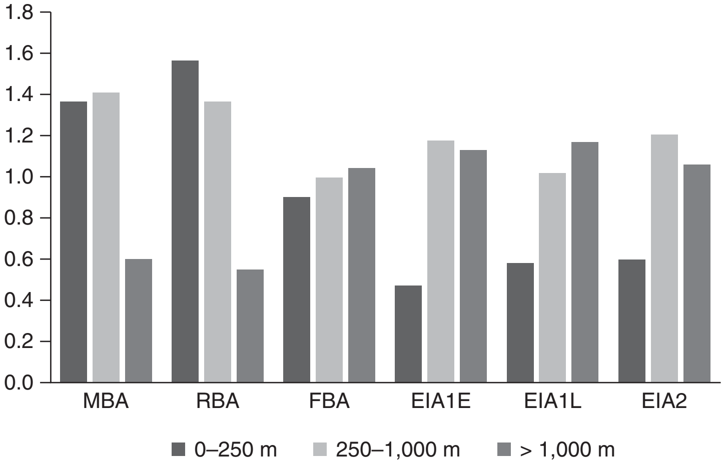


94. Latium vetus: site distribution according to distance from modern rivers associated with alluvial deposits (type B1), which are more likely to have been perennial rivers also in antiquity.

important and other means of communication (e.g., roads) may have acquired a greater importance in the Early Iron Age.[15] The association between sites and small rivers (B2) is not as clear (Fig. 95). This pattern is confirmed if normalised density is calculated (Figs. 96 and 97). Here the strong association between Bronze Age sites and a short distance to large rivers (B1) is even more evident.



95. Latium vetus: site distribution according to distance from modern rivers not associated with alluvial deposits (type B2), which are less likely to have been perennial rivers in antiquity.

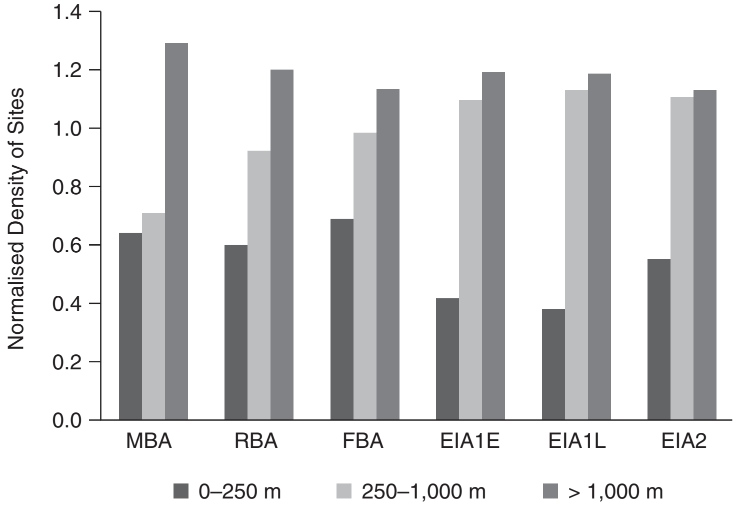


96. Latium vetus: normalised site distribution according to distance from modern rivers associated with alluvial deposits (type B1), which are more likely to have been perennial rivers also in antiquity.

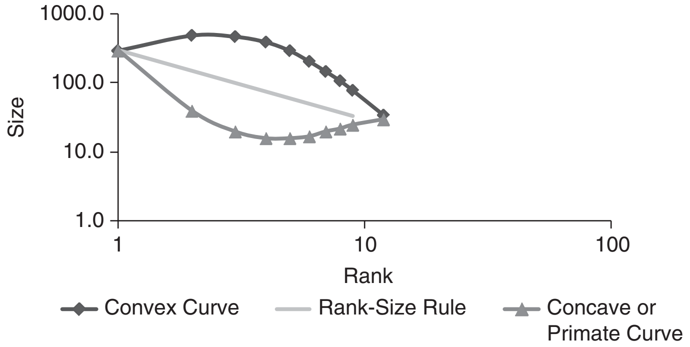
6.3. RANK-SIZE ANALYSIS

Rank-Size Rule

The rank-size rule, advanced by George Kingsley Zipf in the 1940s,[16] expresses the relationship between the ranks of cities and their population. The formula is $P_n = P_1/n$, where P_n is the population of towns ranked n, P_1 is the population of the largest town and n is the rank of the town. The formula states that the population of a town ranked n is equal to the population of the largest town divided by n. For example, if the largest town has a certain population, the



97. Latium vetus: normalised site distribution according to distance from modern rivers not associated with alluvial deposits (type B2), which are less likely to have been perennial rivers in antiquity.



98. Deviations from rank-size log-normality: concave (or primate) and convex deviations.

second-largest town will have a population one-half that number, the third-largest will have a population one-third that number and so on.

As explained briefly in Section 5.4, if the common logarithms of rank and size (generally used in archaeological applications as an indicator of population estimates)[17] are plotted against one another, the result is a straight line with a slope of -1. This classic, 'ideal' distribution is called log-normal and is typical of a state system with a high level of integration between settlements. Two deviations from the log-normal are possible: 'concave' or 'primate' distributions, where the largest settlement is unexpectedly large (typical of imperial or colonial systems), and 'convex' distributions, where the largest settlement is unexpectedly small (typical of systems with a low level of integration) (Fig. 98).[18]

Another less common type of curve is the 'primo-convex' distribution, in which the top portion of the rank-size curve appears concave or primate, while the lower part appears convex. This could be the case of so-called imbalanced system integration, where communication and integration are vertical between primate and lower-order centres but not horizontal among lower-order centres themselves (dendritic systems).[19] Steven E. Falconer and Stephen H. Savage have recently identified a 'double-convex' distribution, which has a steplike appearance. According to these scholars this curve may result from a central place–like site distribution or by several systems pooled together (if the boundaries of the 'region' have not been identified properly).[20]

Gregory A. Johnson applied the rank-size rule to the Susiana plain (Iran) in the fourth millennium BC and demonstrated that an increasing system integration (with the development of a state-level society) was shown by the development of a log-normal rank-size distribution from a convex distribution.[21] Since this pioneering study, the rank-size model has been applied by a number of scholars in several geographical and historical contexts,[22] but there are still unresolved issues in the application of this model to historical interpretation.

Biases related to the nature of the archaeological data itself must be taken into account; it could be difficult, for instance, to estimate a settlement's size and consequently its population density; moreover, settlements could not be exactly contemporary; and finally there could be a lack of preservation and/or recovery of sites.[23] In addition, as stated by Ian Hodder in the 1970s[24] and more recently by R. R. Laxton and William Cavanagh,[25] the Zipf 'law' is empirical, and even though several attempts to demonstrate its mathematical validity have been undertaken there is still no theoretical basis for its application.

As Hodder demonstrated, 'the structure in each rank-size curve is the composite result of a complex balance between original forces and survival and recovery processes,' and it is very difficult to establish whether a deviation from the normal distribution reflects the real play of market forces or just biases in the actual data.[26] In addition, Johnson noted that the interpretation of rank-size graphs could be marred by scale and boundary problems. Johnson's analyses, in fact, have shown how convex distributions could be created by either pooling separate systems or partitioning an individual system (the 'region' problem).[27] It is also possible that a log-normal distribution, which overlooks middle-range settlements, could become a primate distribution.[28]

To minimize these problems, the present work not only considers rank-size graphs, but also calculates the rank-size index and the A-shape coefficient of each curve, which makes it possible to measure the degree of the rank-size curves of different chronological phases and to plot the values.[29] In addition, the calculation of the A-shape coefficient using the method developed by Robert D. Drennan and Christian E. Peterson[30] establishes the statistical confidence of the rank-size curve and demonstrates whether a certain curve and the corresponding sample are actually representative of settlement patterns and market forces or whether the result is due to vagaries in the sampling or errors in the definition of the regional limits.

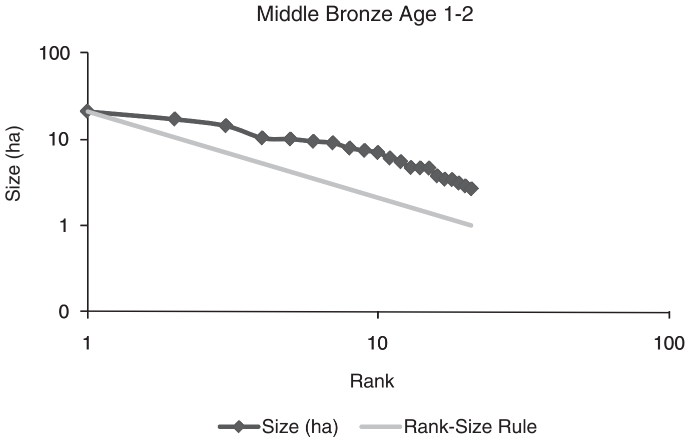
Moreover, as Johnson suggested, rank-size analyses should not be conducted in 'isolation'.[31] In the present work, rank-size analyses not only are compared with analyses carried out with other locational models (spatial efficiency model, central place theory and Voronoi diagrams) applied to the same data set (see Sections 6.4 and 6.5), but also are correlated and compared with independent analyses of different types of evidence (Chapter 7), in order to verify the internal consistency of the general historical interpretation.

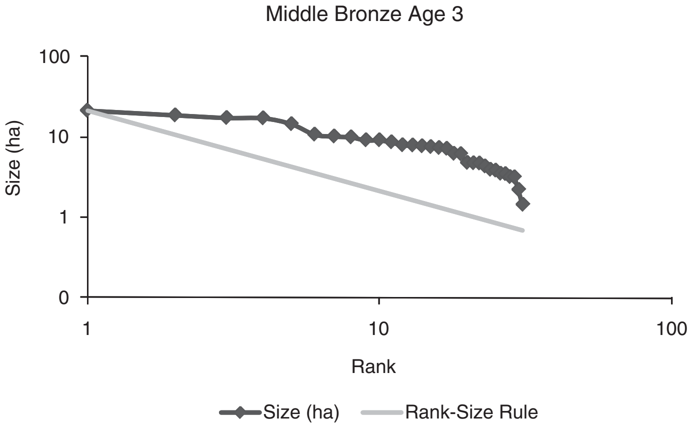
Rank-Size Analysis

Developments leading to the urbanisation of proto-urban centres in the transition between the end of the Bronze Age and the Early Iron Age, discussed in 'The Nature of Settlement Development in Latium vetus' in Section 2.1, are also confirmed by the application of the rank-size rule.[32] According to the model proposed by Johnson (see preceding section) a settlement system with a low level of integration should be represented on a rank-size graph by a convex distribution. Ideally a progressive increase in the level of integration and hierarchy among centres should be represented by a decrease in the convexity of the curve towards a log-normal distribution, which is typical of a settlement system with a high level of integration.

The rank-size graphs for Bronze Age settlements in Latium vetus (cf. Figs. 99 and 100) show convex curves both for the most ancient phases of this age (Middle Bronze Age 1–2 and 3, or seventeenth to fourteenth century BC) and for more recent ones (Recent and Final Bronze Age, or about the thirteenth to tenth century BC). This indicates that the region was still characterised by a low level of integration among settlements. Such a model would be consistent with the settlement pattern proposed by Marco Pacciarelli for this period: a continuous and capillary occupation of the territory by a majority of small open sites and a number of defended hilltop sites (gradually increasing in number with later phases of the Bronze Age), generally with an extent of less than 1–2 ha and rarely larger than 6–10 ha and a low level of integration and hierarchical organisation.[33]

However, as mentioned in Section 4.3, the application of Thiessen polygons to the definition of *ager Romanus antiquus* shows it is possible that a certain level of hierarchy was already present at this time. In particular, as noted by di Gennaro for southern Etruria, it is possible that, during the late Middle Bronze Age, within a territory occupied by the same community some larger and major centres were already acting as 'central places' of sorts and providers of 'central services' for surrounding smaller centres, with their own more specialised functions.[34]

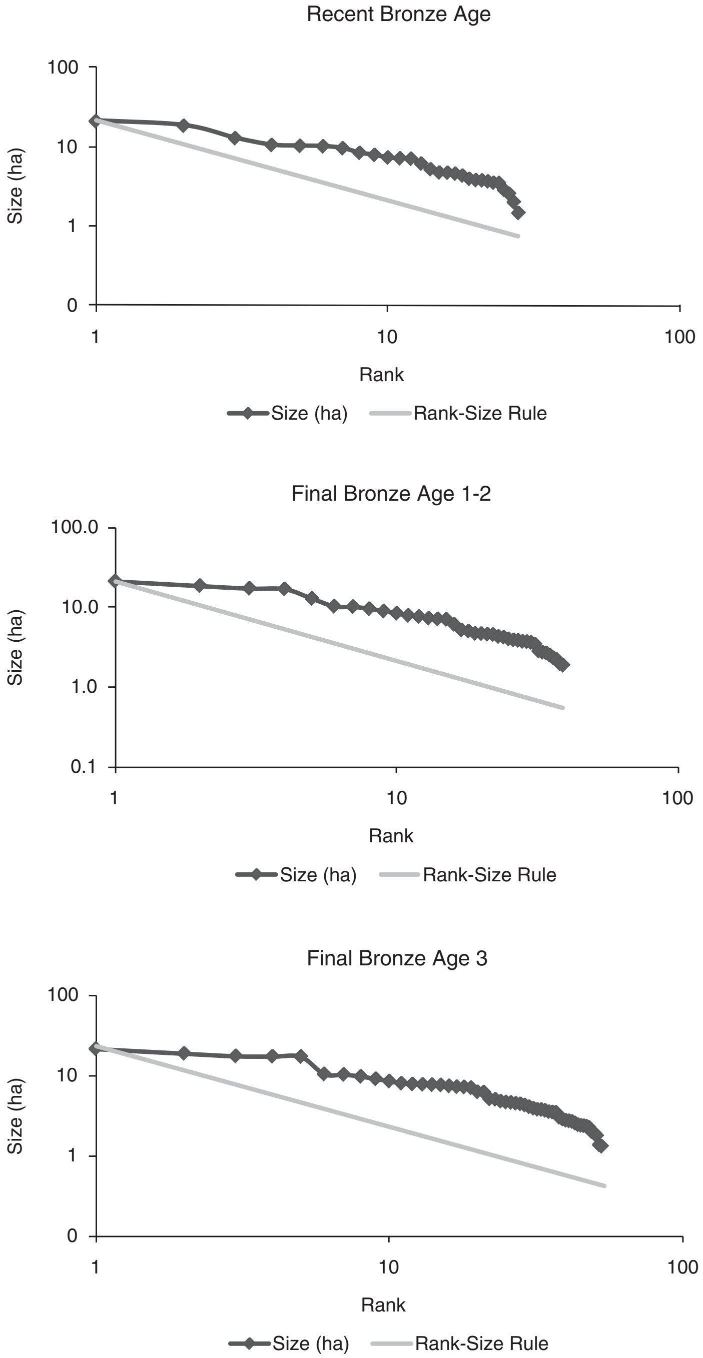




99. Latium vetus: rank-size graphs (traditional plots), Middle Bronze Age.

It is likely, though hypothetical, that a similar sort of organisation, defined by di Gennaro as a 'polycentric' community,[35] was also present in Latium vetus, as suggested by the higher value of the spatial efficiency index for the Middle Bronze Age 3 (fourteenth century BC; cf. Fig. 103). This would seem to imply at least an incipient development of 'rank' in the organisation of settlement distribution, if not a proper 'hierarchy', which comes only in the later Early Iron Age.

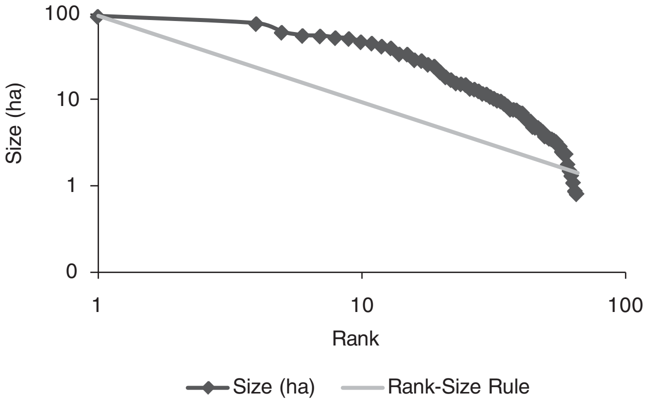
The rank-size graph for the Early Iron Age (Fig. 101) shows a straightening of the convex distribution towards a log-normal distribution and finally an incipient concave distribution. While a convex curve is still present for an early phase of the Early Iron Age 1 (Latial Phase IIA, second half of the tenth century BC), during the second phase of the Early Iron Age 1 (Latial Phase IIB, first half of the ninth century BC) a log-normal distribution starts to appear, which is even clearer during the Early Iron Age 2 (from the mid-



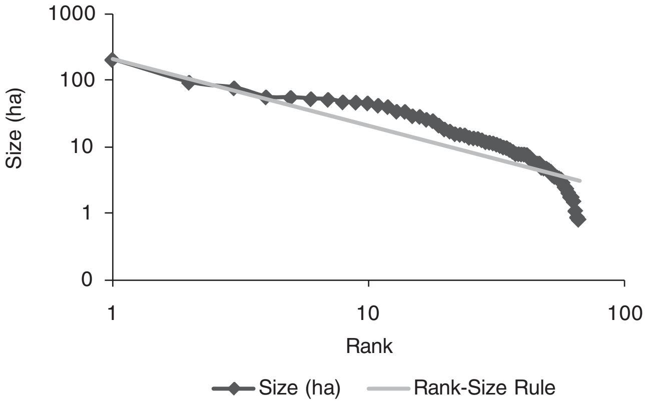
100. Latium vetus: rank-size graphs (traditional plots), Recent and Final Bronze Age.

ninth to the mid-eighth century BC). Finally, with the Orientalizing and Archaic Ages (mid-eighth to the end of the sixth century BC), the log-normal distribution seems to tend towards an almost imperceptible primo-

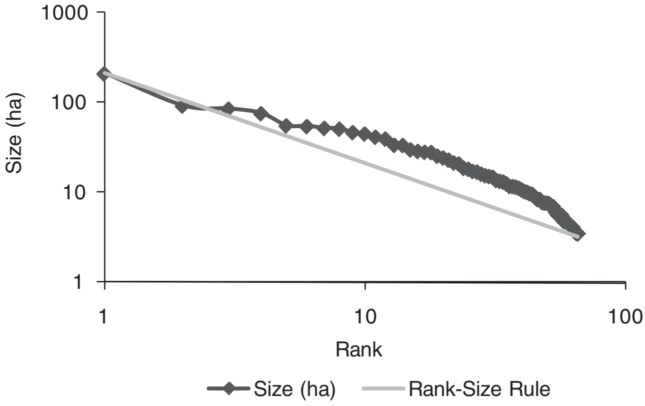
Early Iron Age 1 Early
(Latial Phase IIA)



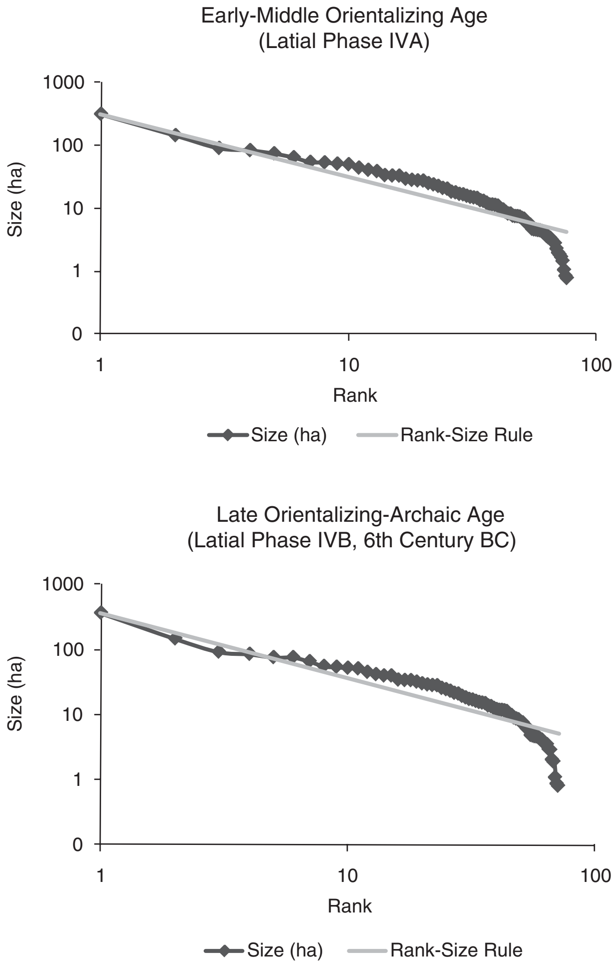
Early Iron Age 1 Late
(Latial Phase IIB)



Early Iron Age 2
(Latial Period III)



101. Latium vetus: rank-size graphs (traditional plots), Early Iron Age.

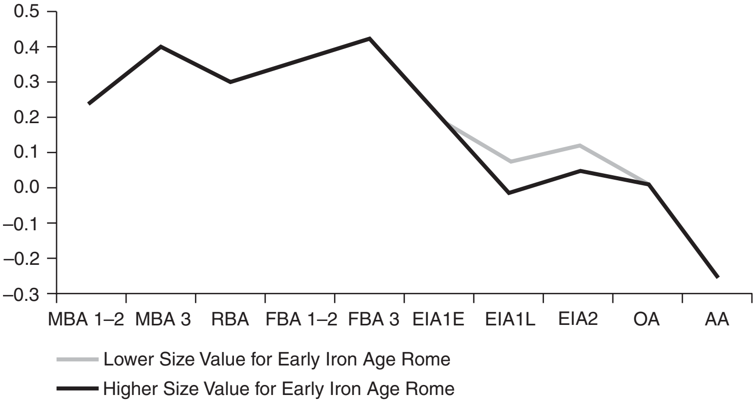


102. Latium vetus: rank-size graphs (traditional plots), Orientalizing and Archaic Ages.

convex distribution (primate or concave in the first part and convex in the second) (Fig. 102).

The calculation of the rank-size index[36] (Fig. 103) confirms that from the second part of the Early Iron Age (Latial Phase IIB, or about the first half of the ninth century BC) the rank-size graph is very close to a log-normal distribution, indicated by a rank-size index equal to 0. In fact, values for the later phases of the Early Iron Age are all around 0. This is confirmed by using both the highest and the lowest size calculation for the settlement of Rome (see 'Proto-Urban Rome' in Section 3.1).

As mentioned in the preceding section, the A-shape coefficient and statistical confidence intervals for the rank-size graphs in different phases were calculated using the utility developed by Drennan.[37] Like the rank-size index, the A-shape coefficient is a mathematical coefficient, which measures and

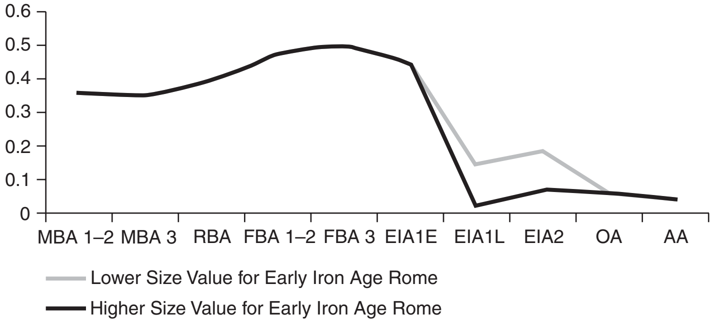


103. Latium vetus: rank-size index trend.

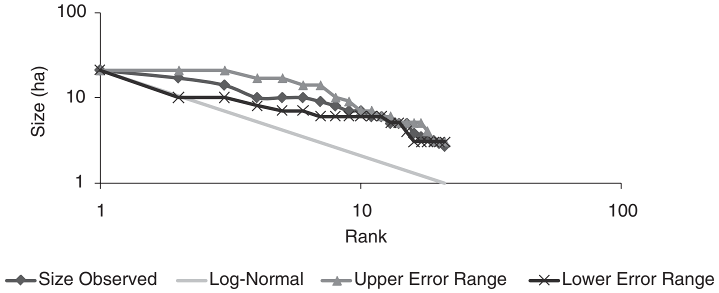
describes the shape of a rank-size curve. Having a mathematical value which analytically describes the shape of a curve is useful for establishing a precise comparison between different times or different regions, which are not easily detected by a general and intuitive visual examination of the rank-size graph. In addition, Drennan used this coefficient as a basis for establishing levels of confidence of the curves.[38]

The calculation of the A-shape coefficient (Fig. 104) results in values between 0.3 and 0.5 for the entire Bronze Age to the beginning of the Early Iron Age 1, or Latial Phase IIA (ca. second half to the end of the tenth century BC). These values are consistent with the convexity of the rank-size curves shown in Figures 99–101. Then the A-shape coefficient decreases sharply between the Early Iron Age 1 Early (Latial Phase IIA, second half of the tenth century BC) and Late (Latial Phase IIB, first half of the ninth century BC), when it drops to values around 0, which will continue during the Early Iron Age 2, Orientalizing Age and Archaic Age. Again, this is consistent with the nearly log-normal distribution of the rank-size curves for these periods (Figs. 101 and 102). Both graphs, which plot the rank-size index (Fig. 103) and the A-shape coefficients (Fig. 104), show almost the same trends, which seem to reinforce the results achieved.

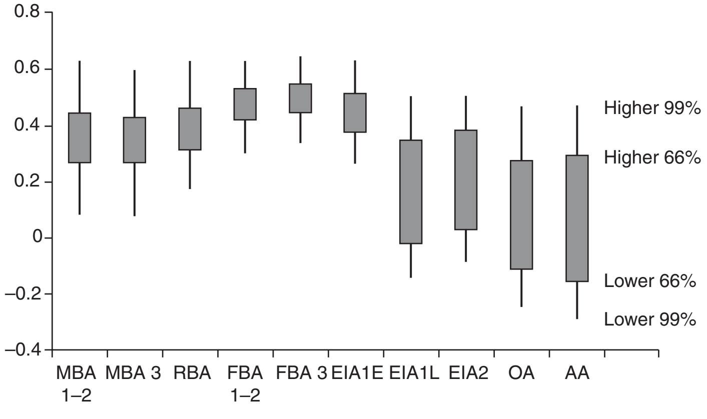
Finally, Figure 105 illustrates an example of confidence intervals calculated for the Latin settlement rank-size curve during the Middle Bronze Age 1–2 (seventeenth to fifteenth century BC), which show a statistical accuracy of 90% for the rank-size curve degree or A-shape coefficient within the range of the higher- and lower-confidence intervals. If the error ranges or confidence intervals for the A-shape coefficients in various periods are plotted on a graph, the trend shown in Figure 106 is obtained. The graph shows that the error ranges for the A-shape coefficients are much smaller for the Bronze Age than later phases, with a statistical confidence of 99 and 66%. However, the



104. Latium vetus: A-shape coefficient values.



105. Latium vetus: rank-size curve with 90% confidence interval, Middle Bronze Age 1–2.



106. Latium vetus: statistical confidence intervals for A-shape coefficient values.

general trend still shows a significant decrease during the second part of the Early Iron Age 1 (Latial Phase IIB, first half of the ninth century BC), which confirms a tendency of the rank-size curves towards log-normality (values around 0), implying an increasing level of hierarchy and settlement integration (Fig. 106).

There is a dramatic and important shift from values between 0.2 and 0.6, and in all cases greater than 0, during the Bronze Age – which indicates convex rank-size distributions and therefore a low level of hierarchy and settlement integration – towards values around 0. This in turn indicates that a log-normal rank-size distribution or a high level of hierarchy and settlement integration occurs at least from Latial Phase IIB (first half of the ninth century BC) and possibly even earlier, in Latial Phase IIA (end of the tenth century BC), though less dramatically (Fig. 106).

To conclude, rank-size analysis, with the calculation of the rank-size index and A-shape coefficient and the calculation of statistical confidence intervals, seems to confirm that significant trends towards higher complexity in settlement patterns were already under way in Latium vetus by the ninth century BC, well in advance of the first contacts with Greek colonists in southern Italy, during the eighth century BC. These changes seem to occur in parallel with or immediately after the formation of the first large nucleated and centralised proto-urban centres in the region (see 'The Nature of Settlement Development in Latium Vetus' in Section 2.1 and 'Settlement Centralisation' in Section 7.2).

6.4. SETTLEMENT PATTERNS AND LOCATIONAL MODELS

Spatial Efficiency Model

In the late 1970s, Vincas P. Steponaitis was not alone in questioning whether the central place model could be applied to the study of pre-capitalistic societies. He noticed significant differences between market-based and chiefly systems with respect to (1) the way central settlements relate to their hinterland or region and (2) the flow of communication and commercial exchanges between settlements of different hierarchical levels.

According to Steponaitis, the complementary regions of different market centres are determined by the statistical combination of individual decisions. Therefore, provided with a choice between two or more markets with equivalent services or goods, people will choose the nearest one. As a consequence, market places that offer equivalent services or goods compete with one another and tend to be evenly spaced over the landscape, in order to maximize profits and minimize competition (as predicted by central place theory). They generally tend to be located at the centre of their hinterland, which may vary in size and shape, especially if another centre of equal level changes location.

'The hinterlands of chiefly centres are formed *de iure* as clearly delineated territories. In effect, they are administrative districts, defined in terms of established political boundaries, and often in terms of corporate land-use rights vested in a particular kin group'.[39] Therefore, according to Steponaitis, competition among chiefly centres of equal rank is much less pronounced than that between market centres, and the ‘spatial repulsion’ between such centres is much less important than the small distance of chiefly centres to their lower-order centres.[40]

Steponaitis notes that another important difference between market and chiefly systems is the configuration of spatial channels of communication between households and higher-order centres. In a market system, movements between households and all ‘service centres’ would be direct. In other words, consumers would visit both lower-order centres and higher-order centres (capital market places) directly and generally by the shortest route, probably for common, simple needs in the first case and for more elaborate products and services in the second. By contrast, in a chiefly system, communications and exchanges between households and higher-order centres (chiefly centres) would tend to be mediated by lower-order centres. For these reasons, Steponaitis developed a new locational model for studying settlement hierarchies in pre-state societies and complex chiefdoms in which the location of lower-order centres or minor centres in relation to chiefly centres is a major factor of analysis. This model is based on a number of other assumptions regarding the locational constraints of chiefly centres.

Any community can be considered a basically closed environment with a certain finite amount of energy. So the costs of maintaining the central institutions of complex chiefdoms (nobility, craftsmen, non-productive, public and religious architecture, sumptuary goods, etc.) are covered by surplus production and the corvée labour of commoners. The ‘effort’ invested by commoners in surplus production and corvée labour could be maximised by minimising the ‘effort’ spent to move goods and people to and from the chiefly centres.[41] As a consequence, minimising this cost can best be achieved by an efficient location of the chiefly centres. According to Steponaitis, the ideal geographical position of a chiefly centre is calculated in relation to both local settlements and second-order centres, and takes into account the chiefly centre’s population size. However, as mentioned earlier, with a certain degree of political centralisation, Steponaitis believes that the position of lower-order centres is more important than the distribution of local settlements, because lower-order centres would generally act as intermediaries between local settlements and the chiefly centre. Therefore, the capital should always be located ‘at the centre of gravity of the minor centres’.[42]

Then, according to Steponaitis, the spatial efficiency of the location of a chiefly centre can be calculated by dividing the sum of the squared distances of the subordinate centres from the ideal centre of gravity of the minor centres (CGMC) by the sum of their squared distances from the capital. This model is expressed by the following formula:

$$\frac{\sum_{i=1}^{I} R_i^2}{\sum_{i=1}^{I} D_i^2}.$$

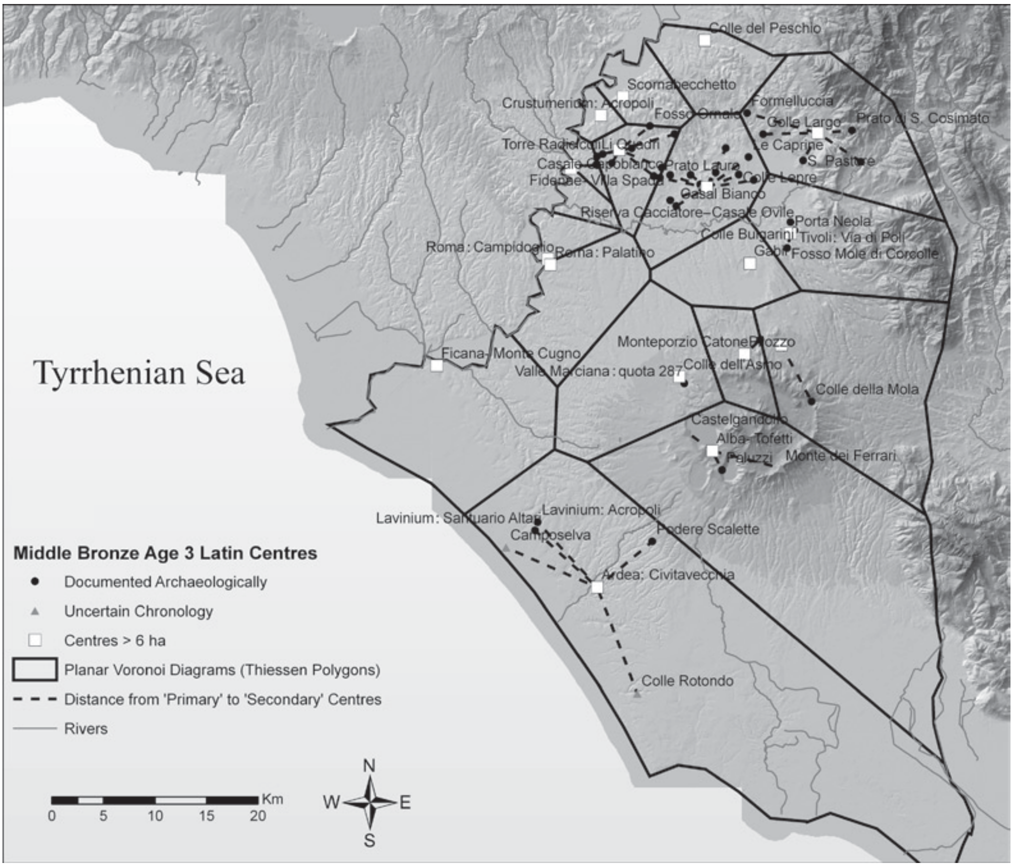
In this formula R_i is the distance from the CGMC to the minor centre in the ith district and D_i is the distance from the capital to the minor centre in the ith district. Because by definition $\sum R_i^2$ is less than or equal to $\sum D_i^2$, the spatial efficiency index is 1.0 when the centre is ideally located. If the observed position of the 'capital' diverges from its ideal location, the value of the index decreases.[43]

The formula is based on the assumption that the 'cost' or effort involved in movement over a certain distance is proportional to the distance squared. It is important to note that this cost or effort represents not only the energy expenditure (which would be directly proportional to distance) but also people's perception of difficulties involved in travelling. In fact, as Steponaitis suggests, some empirical studies have demonstrated 'that the frequency of travel (or other kind of interaction) between two points often diminishes in proportion to a value very close to the distance squared'.[44] Therefore, the distance squared provides a simple but very effective mathematical means of finding the point at which 'cost' is minimized.

Ideally, finding the optimal location of the chiefly centres would require complete data on the distribution of population (settlements) and knowledge of where the boundaries between the administrative districts lie. However, as Steponaitis suggests, by using the CGMC as an approximation of the ideal locus, this problem can be circumvented. In fact, in this case it is sufficient to know the spatial distribution of the minor centres.[45]

At this point, it should be noted that results of the calculation of the spatial efficiency index might be affected by biases in the data sample, especially for the earlier chronological phases. Early Iron Age secondary or minor centres tend to be conspicuous sites and therefore less likely to have been overlooked by archaeological investigation. By contrast, as already emphasised in the discussion of the data collected and used for analyses in Section 2.3, Bronze Age settlements tend to be less visible and affected to a greater extent by post-depositional factors.

In order to identify the minor centres in each district of Latium vetus, planar Voronoi diagrams (or Thiessen polygons) were used to model notional territories related to each chiefly centre.[46] As already mentioned, on the basis of current scholarship[47] and size-frequency histograms (see Section 4.2; Figs. 34 and 35), Bronze Age settlements larger than 6 ha and Early Iron Age settlements larger than 20–25 ha are considered first-order centres. Thus Thiessen polygons were constructed only around first-order centres larger than 6 ha in the Bronze Age and larger than 20–25 ha in the Early Iron Age and subsequent phases. Moreover, all Bronze Age settlements smaller than 6 ha and Early Iron Age settlements smaller than 20–25 ha contained in each centre's polygon were considered to be dependent on that centre. Figure 107 shows as an example the notional territories built around Middle Bronze Age 3 Latin 'primary'

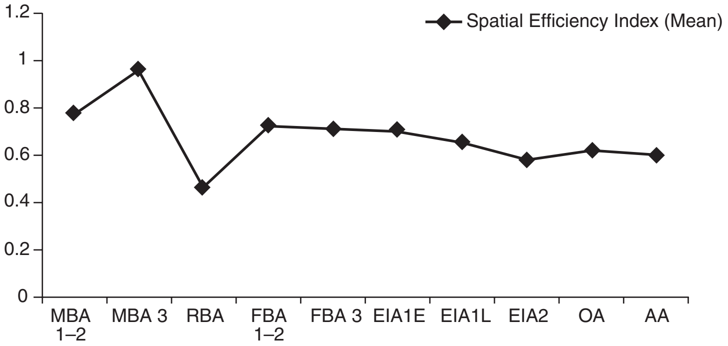

Colle del Peschio
Scornabecchetto
Crustumerium: Acropoli
Fosso Ornalo
Formelluccia
Colle Largo
Prato di S. Cosimato
Torre Radicicoli
Li Quadri
Le Caprine
S. Pastore
Casale Capobianco
Prato Laura
Fidenae–Villa Spada
Colle Lepre
Casal Bianco
Riserva Cacciatore–Casale Ovile
Porta Neola
Colle Bulgarini
Tivoli: Via di Poli
Gabii
Fosso Mole di Corcolle
Roma: Campidoglio
Roma: Palatino
Tyrrhenian Sea
Ficana–Monte Cugno
Monteporzio Catone
Pozzo
Valle Marciana: quota 287
Colle dell'Asino
Colle della Mola
Castelgandolfo
Alba–Tofetti
Paluzzi
Monte dei Ferrari
Lavinium: Santuario Altari
Lavinium: Acropoli
Camposelva
Podere Scalette
Ardea: Civitavecchia
Colle Rotondo
Middle Bronze Age 3 Latin Centres
● Documented Archaeologically
▲ Uncertain Chronology
☐ Centres > 6 ha
Planar Voronoi Diagrams (Thiessen Polygons)
Distance from 'Primary' to 'Secondary' Centres
Rivers
0
5
10
15
20
Km
N
W
E
S

107. Latium vetus: notional territories according to Thiessen polygons built around 'primary' centres larger than 6 ha, Middle Bronze Age 3.

centres larger than 6 ha, with the resulting districts and associated 'secondary' or 'dependent' centres.

The spatial efficiency index was calculated, according to the model elaborated by Steponaitis and described earlier,[48] for each district and then a regional mean value was calculated for each chronological phase and plotted on a graph (Fig. 108). The spatial efficiency index showed a very high value for the Middle Bronze Age 3 and then a generally decreasing trend, with Early Iron Age values generally slightly lower than Bronze Age values.

These results are consistent with values of the rank-size index and A-shape coefficient (Figs. 103 and 104). For the Bronze Age these values are relatively large, indicating a low level of hierarchy and settlement integration, and for the Early Iron Age they tend towards zero, which indicates a good level of hierarchical integration. To summarize, the spatial efficiency model seems to have greater applicability to Latin settlement distribution during the Bronze Age, where most scholars recognise a chiefdom level of organisation, than to later



108. Latium vetus: spatial efficiency index for Bronze Age and Early Iron Age territorial districts.

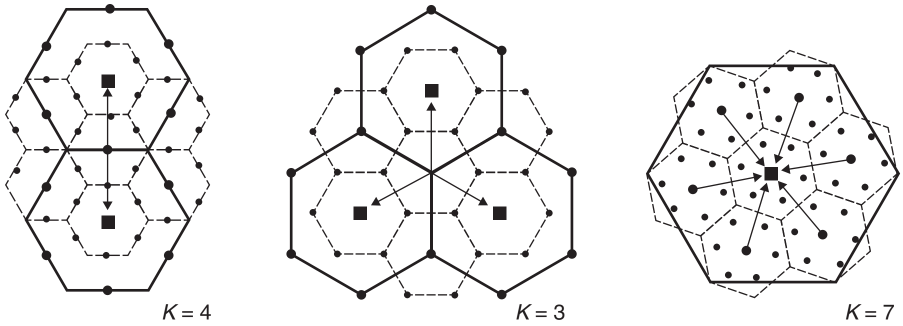
phases, when Rome and its surrounding region are moving towards a 'state'-level society (see Section 7.3; Table 23), and the rank-size analysis seems to give better results.

Central Place Theory

To verify this hypothesis and to examine the evidence more fully, another model, central place theory,[49] was applied to the same data and the results of the two analyses were compared. Walter Christaller developed central place theory to explain how cities and towns develop hierarchies of economic activity on the basis of their population size and the distance inhabitants are prepared to travel for goods and services. Although Christaller examined the location and relationship between cities in southern Germany in the 1930s, archaeologists have devoted a great deal of attention to central place theory in the analysis of pre-historic and historic settlement systems.[50]

The model is based on a series of assumptions: space is an isotropic (all-flat) surface; population and resources are evenly distributed; all consumers have similar purchasing power and demand for goods and services; transportation costs are equal in all directions and proportional to distance; the market is dominated by perfect competition, which means that no producer or consumer has the power to influence market prices; and all producers/sellers share the same product/market knowledge and enjoy free entry and exit to and from the market. Given these assumptions, Christaller observed that settlements tend to form in a triangular/hexagonal lattice, this being the most efficient pattern for travel between settlements.

Christaller identified three main central place arrangements, which can be identified by different values of *K*, which is the ratio between the number of markets operating at a given level and the number of markets operating at one higher level. A $K = 3$ hierarchy would maximize market efficiency ('provision'



109. Classical central place arrangements developed by Walter Christaller. (Redrawn after Smith 1976, fig. 4, p. 19.)

Middle Bronze Age 1–2				
Area (ha)	Level	Number of centres	Number of market areas	Calculation *K*
> 16	1.0	2.0	2.0	NA
6–16	2.0	10.0	12.0	6.0
< 6	3.0	38.0	50.0	4.2

Middle Bronze Age 3				
Area (ha)	Level	Number of centres	Number of market areas	Calculation *K*
> 16	1.0	4.0	4.0	NA
6–16	2.0	15.0	19.0	4.8
< 6	3.0	44.0	63.0	3.3

Recent Bronze Age				
Area (ha)	Level	Number of centres	Number of market areas	Calculation *K*
> 16	1.0	2.0	2.0	NA
6–16	2.0	11.0	13.0	6.5
< 6	3.0	45.0	58.0	4.5

Final Bronze Age 1-2				
Area (ha)	Level	Number of centres	Number of market areas	Calculation *K*
> 16	1.0	4.0	4.0	NA
6–16	2.0	12.0	16.0	4.0
< 6	3.0	50.0	66.0	4.1

Final Bronze Age 3				
Area (ha)	Level	Number of centres	Number of market areas	Calculation *K*
> 16	1.0	6.0	6.0	NA
6–16	2.0	16.0	22.0	3.7
< 6	3.0	62.0	84.0	3.8

110. Latium vetus: Bronze Age *K*-values according to traditional central place theory.

or ‘market principle’), with the largest number of central places possible; a $K = 4$ hierarchy would maximise traffic efficiency, with central places aligned primarily on main traffic routes, sometime at the expense of dependent places (‘transport principle’); and a $K = 7$ hierarchy would maximise administrative efficiency, with the best connection of each central place to all its dependent centres (‘administrative principle’)[51] (Fig. 109).

K-Values were calculated for Bronze and Early Iron Age Latium vetus settlements, and the results are shown in Figures 110 and 111. In order to establish hierarchical levels, settlement size-frequency diagrams were plotted and threshold values observed (see, e.g., the size-frequency histograms in Figs. 34 and 35). Settlement size classifications developed and discussed in a number of studies on settlement patterns and dynamics in pre-historic middle Tyrrhenian Italy were also taken into account.[52] The analysis showed that, for the Bronze Age, *K*-values are between 4 and 7 if a three-level hierarchy is assumed (Fig. 110). This suggests that during the Bronze Age second-order settlements are located to maximise administrative efficiency (*K*-values of 7) and, possibly, transport efficiency (*K*-values of 4).

A Bronze Age settlement organisation in Latium vetus corresponding to the administrative principle is consistent with the results of the spatial efficiency index analysis, where Bronze Age (especially Middle Bronze Age 3) chiefly centres seemed to be located closer to the centre of gravity of their secondary settlements in order to maximise communication to and from them and control over them. By contrast, a settlement system corresponding to transport efficiency is generally considered to be related to modern industrialized society, when straight railway inter-regional communication routes started to have a major impact on the location of central places along railway lines.[53] In any case, the transport principle seems not to have been applied in any study to explain settlement patterns earlier than Roman times.[54]

However, if river connections are considered in the case of Bronze Age Latium vetus, it seems that most Bronze Age major settlements (larger than 6 ha) are located along these routes (in particular the Tiber and Aniene Rivers or the sea; see Figs. 121–25), as predicted by the transport principle, and at the same time at the optimal location for controlling all their dependent minor settlements, according to the administrative principle and the spatial efficiency index analysis. In this way it is possible to justify applying the transport principle to Bronze Age Latium, even though it is normally related to more advanced economic and political organisations.

As shown in Figure 111, for the Early Iron Age and later periods, assuming a four-level hierarchy, the *K*-values range between 3 and 4 for the Early Iron Age 1, and 2 and 3 for the Early Iron Age 2, Orientalizing Age and Archaic Age; this clearly corresponds to the provision or market principle, especially in the later phases. This would suggest that, during this time, settlement distribution and hierarchical organization were based on market efficiency. In particular, Bintliff related this model of central place organisation to the idealised mature regional development of a primarily agricultural society,[55] which is exactly the case of Latium during the Early Iron Age, as will be shown in the following sub-section.

Again, this result seems to be consistent with the negative outcome of the spatial efficiency index calculation for Early Iron Age Latin settlements. That model, developed for chiefly systems, is less applicable to later periods, where a more advanced political organisation, such as 'early state' and 'city-state', is generally assumed and also suggested by analyses conducted in this work (cf. Sections 6.3–6.5; Section 7.3).

Early Iron Age 1 Early				
Area (ha)	**Level**	**Number of centres**	**Number of market areas**	**Calculation *K***
>80/85	**1.0**	2.0	2.0	NA
50–80/85	**2.0**	5.0	7.0	**3.5**
20/25–50	**3.0**	16.0	23.0	**3.3**
<15/20	**4.0**	67.0	90.0	**3.9**

Early Iron Age 1 Late				
Area (ha)	**Level**	**Number of centres**	**Number of market areas**	**Calculation *K***
>80/85	**1.0**	2.0	2.0	NA
50–80/85	**2.0**	5.0	7.0	**3.5**
20/25–50	**3.0**	17.0	24.0	**3.4**
<15/20	**4.0**	66.0	90.0	**3.8**

Early Iron Age 2				
Area (ha)	**Level**	**Number of centres**	**Number of market areas**	**Calculation *K***
>80/85	**1.0**	3.0	3.0	NA
50–80/85	**2.0**	5.0	8.0	**2.7**
20/25–50	**3.0**	17.0	25.0	**3.1**
<15/20	**4.0**	54.0	79.0	**3.2**

Orientalizing Age				
Area (ha)	**Level**	**Number of centres**	**Number of market areas**	**Calculation *K***
>80/85	**1.0**	4.0	4.0	NA
50–80/85	**2.0**	6.0	10.0	**2.5**
20/25–50	**3.0**	17.0	27.0	**2.7**
<15/20	**4.0**	63.0	90.0	**3.3**

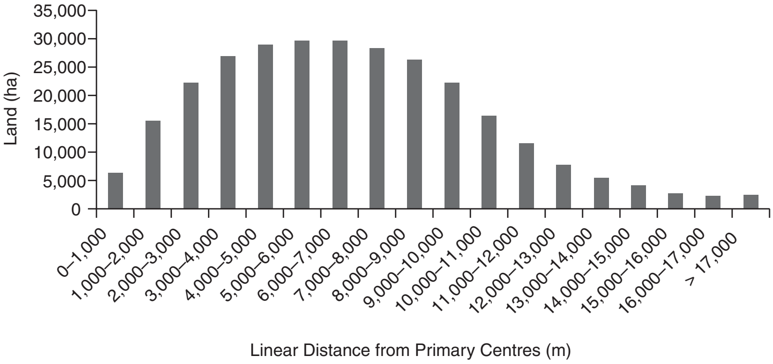
Archaic Age				
Area (ha)	**Level**	**Number of centres**	**Number of market areas**	**Calculation *K***
>80/85	**1.0**	4.0	4.0	NA
50–80/85	**2.0**	7.0	11.0	**2.8**
20/25–50	**3.0**	19.0	30.0	**2.7**
<15/20	**4.0**	44.0	74.0	**2.5**

111. Latium vetus: Early Iron Age *K*-values according to traditional central place theory.

To conclude, both the spatial efficiency index analysis and the application of central place theory seem to suggest that the Latin settlement organisation moved from a Bronze Age chiefdom territorial system, where primary centres were located to maximise administrative communication with secondary centres (and possibly river or sea transportation routes among primary centres), to a market distribution system, where competition among equally ranked centres offering the same services and goods seems to have been the driving force for settlement distribution.

Site Distribution and Hierarchical Levels: Regional Sample

In this section, analyses already carried out at the territorial level ('Site Distribution and Hierarchical Levels: Territorial Sample' in Section 5.4) will be applied to the



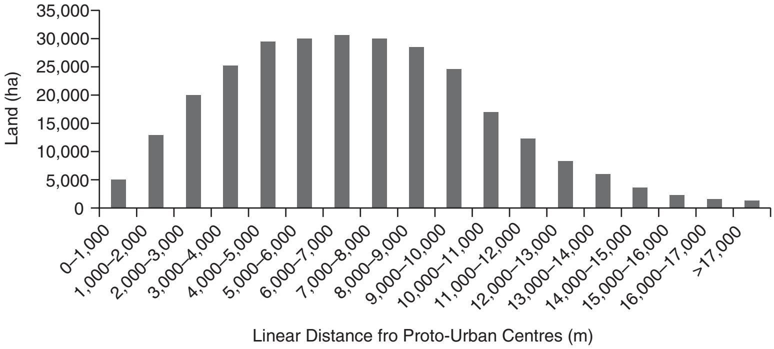
112. Latium vetus: land distribution according to distance from Final Bronze Age 3 ‘primary’ centres (larger than 6 ha).

distribution of sites to their hierarchical level and to land and resource availability. Results from the analysis of the data sample at the territorial level seem to be consistent with the model elaborated by Bintliff for first millennium BC Greece and illustrated in Section 1.2, which combines theories about territorial behaviours, traditional catchment theories and demographic models.[56]

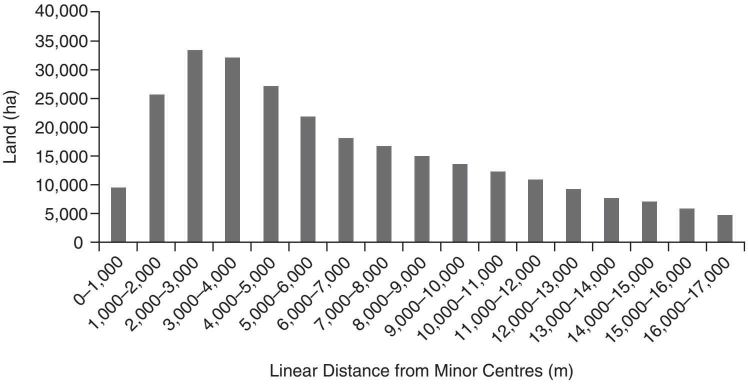
According to this model, settlement organisation seems to move from a pattern of dispersed, small and equally ranked villages, determined predominantly by land use, towards a more hierarchical settlement organisation that is dictated by both land use and rural access to markets, until a critical point is reached at which any further demographic growth or a lack of resources would cause a collapse of the already stretched equilibrium of the system. All of these patterns and stages in the evolution of settlements can be identified in specific settlement distributions and specific distance modules among settlements in Latium vetus from the Bronze Age onwards, as shown later (see also Section 7.3, “Bintliff’s Socio-Ecological Model Applied to Urbanisation in Latium Vetus”).

The average size of first-order Bronze Age settlements within Latium vetus is about 5–6 ha, with a few settlements between 10 and 20 ha, and the average distance between each settlement and the nearest settlement of equal rank ranges from a minimum of 5–7 km to a maximum of 16–17 km but in most cases is about 10–15 km, which implies a radius of about 5–7.5 km, or 1–1.5 hours. The validity of this territorial radius seems to be confirmed by Figure 112, which shows land distribution according to the distance from primary centres during the Final Bronze Age 3. As suggested by Bintliff, this is consistent with the ideal catchment area (about 5- to 6-km radius) predicted for a simple farming society by traditional site catchment analysis.[57]

With the formation of large proto-urban centres in the Early Iron Age, primary settlements are generally larger than 20–25 ha, some of them are between 40 and 80 ha and only Rome surpasses 100 ha. The average distance of Early Iron Age centres from neighbours of equal rank ranges from



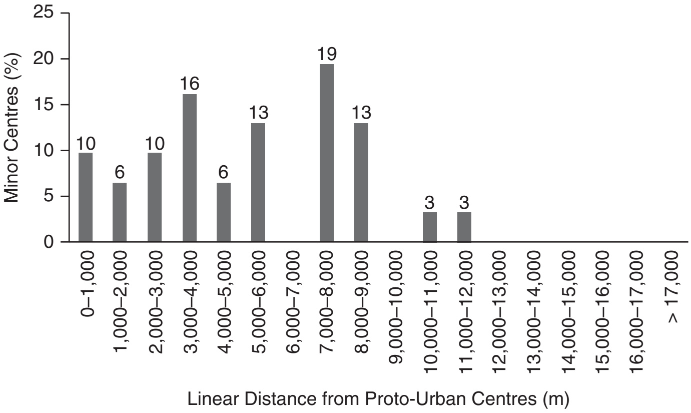
113. Latium vetus: land distribution according to distance from Early Iron Age 1 Early proto-urban centres (larger than 20–25 ha).



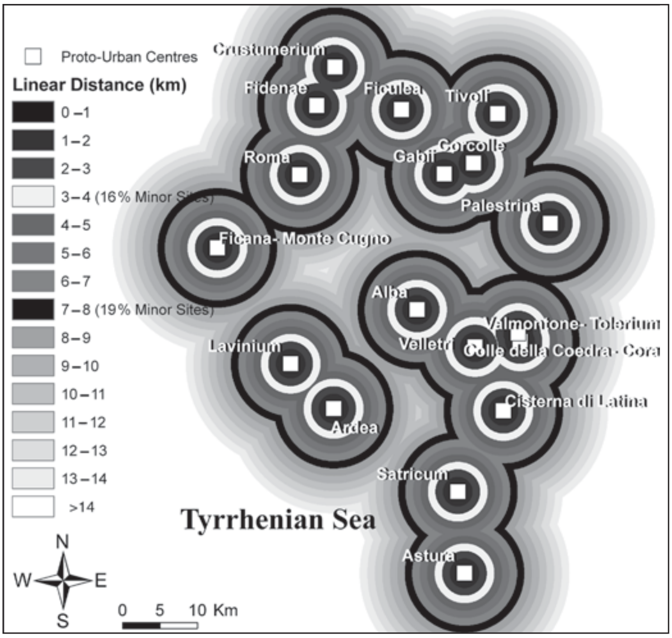
114. Latium vetus: land distribution according to distance from Early Iron Age 1 Early minor centres.

a minimum of 7–8 km to a maximum of 17–18 km (as in the case of Rome), with an average of 13 km, or 6- to 6.5-km radius. The distribution of land according to distance from settlements larger than 20–25 ha shows that during the Early Iron Age most of the land lies between 4 and 10 km from these proto-urban centres (Fig. 113) and between 1 and 6–7 km from minor centres, which are smaller than 20–25 ha and larger than 4 ha (Fig. 114).

As for the distribution of minor centres, these settlements are between 7 and 9 km from proto-urban centres during the Early Iron Age 1 (Figs. 115 and 116) and between 5 and 6 km during the Early Iron Age 2 (Figs. 117 and 118). Thus the location of minor centres seems to imply that between the Early Iron Age 1 and the Early Iron Age 2 the Latin territorial organisation evolved from a system with an average territorial radius of 3.5–4 km, during the Early Iron Age 1 (cf. Fig. 119), to a system with an average territorial radius of 1.5–2.5 km,



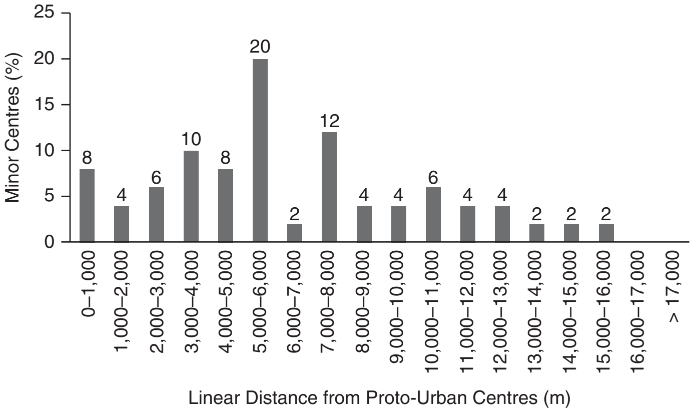
115. Latium vetus: frequency of minor centres (larger than 4 ha and smaller than 20–25 ha) in relation to distance from proto-urban centres (larger than 20–25 ha), Early Iron Age 1 Late.


Proto-Urban Centres
Linear Distance (km)
0–1
1–2
2–3
3–4 (16% Minor Sites)
4–5
5–6
6–7
7–8 (19% Minor Sites)
8–9
9–10
10–11
11–12
12–13
13–14
>14
N
W
E
S
0 5 10 Km
Crustumerium
Fidenae
Ficulea
Tivoli
Roma
Gabii
Corcolle
Palestrina
Ficana-Monte Cugno
Alba
Valmontone-Tolerium
Velletri
Colle della Coedra-Cora
Lavinium
Ardea
Cisterna di Latina
Satricum
Astura
Tyrrhenian Sea

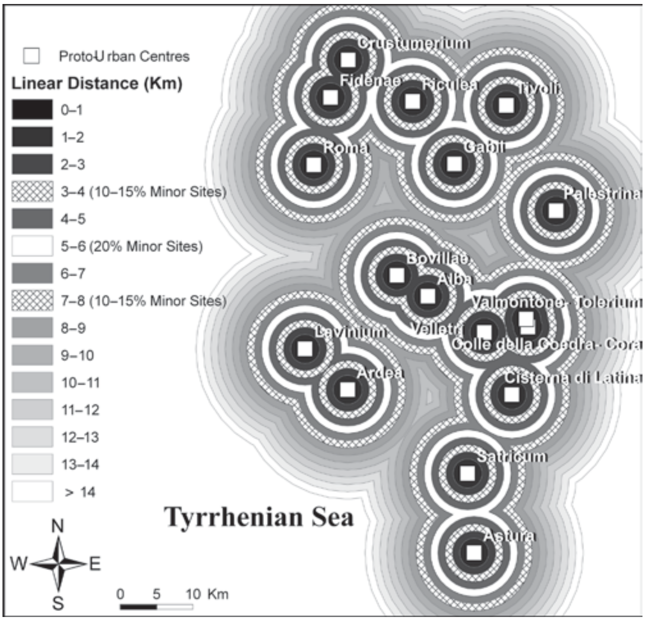
116. Latium vetus: settlement distribution, Early Iron Age 1 Late.

during the Early Iron Age 2 (see Fig. 120 and Section A3 of the appendix for calculations and statistical evaluations).[58]

Both the distribution of Bronze Age and Early Iron Age Latin settlements and their accessibility to land seem to be consistent with the model elaborated by Bintliff for Greece. In fact, from an original and nearly ideal catchment radius of about 5–7.5 km for Latin Bronze Age villages during the Early Iron Age 1, the average territorial radius is reduced by fission to 3.5–4 km assuming natural demographic growth and no particular stress for the communities



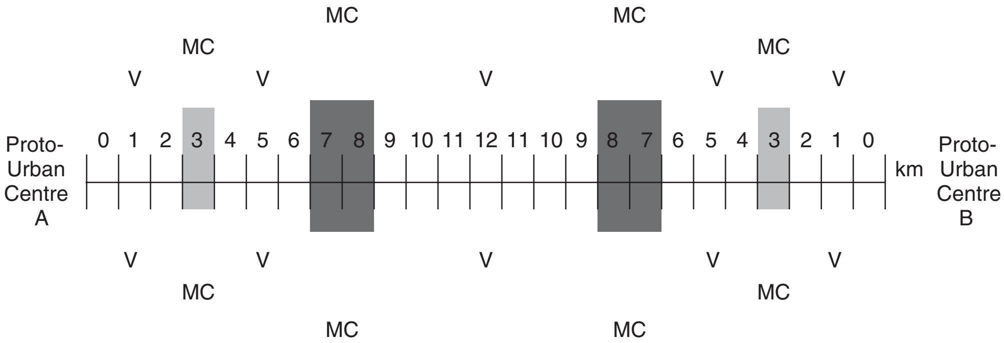
117. Latium vetus: frequency of minor centres (larger than 4 ha and smaller than 20–25 ha) in relation to distance from proto-urban centres (larger than 20–25 ha), Early Iron Age 2.


Proto-Urban Centres
Linear Distance (Km)
0–1
1–2
2–3
3–4 (10–15% Minor Sites)
4–5
5–6 (20% Minor Sites)
6–7
7–8 (10–15% Minor Sites)
8–9
9–10
10–11
11–12
12–13
13–14
> 14
N
W
E
S
0 5 10 Km
Tyrrhenian Sea
Crustumerium
Fidenae
Ficulea
Tivoli
Roma
Gabii
Palestrina
Bovillae
Alba
Valmontone - Tolerium
Velletri
Colle della Coedra - Cora
Lavinium
Ardea
Cisterna di Latina
Satricum
Astura

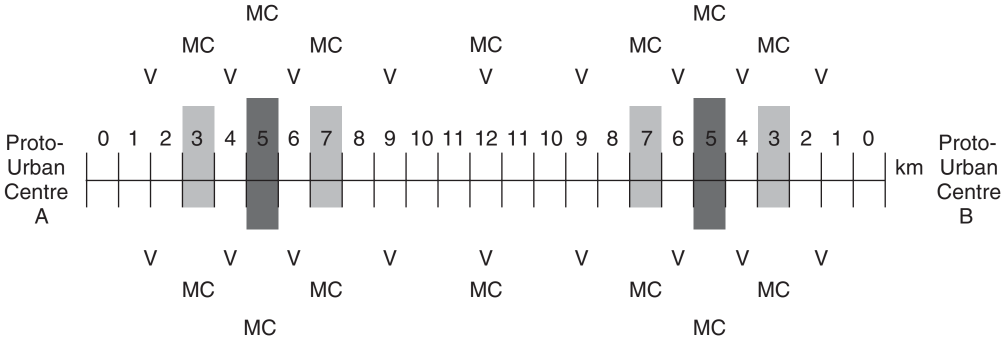
118. Latium vetus: settlement distribution, Early Iron Age 2.

involved. By contrast, the further reduction to a catchment radius of 1.5–2.5 km during the Early Iron Age 2 and later phases (Orientalizing and Archaic Ages) implies the degeneration from a mature and stable territorial system (about 3–4 km radius) to one stressed by demographic pressure and/or lack of resources (about 1- to 2-km radius).[59]

At the same time, during the Early Iron Age a number of first-order large proto-urban centres emerge in Latium vetus (generally more than 20–25 ha and in some cases between 40 and 80 ha or even 100–200, as in the case of Rome), with a minimum separation of 7–8 km to a maximum of 15–18



119. Latium vetus: schematic representation of settlement distribution, Early Iron Age 1 Late. Dark grey, highest density of minor centres (19%); light grey, second-highest density of minor centres (16%); MC, minor centres; V, villages.



120. Latium vetus: schematic representation of settlement distribution, Early Iron Age 2. Dark grey, highest density of minor centres (20%); light grey, second-highest density of minor centres (10–15%); MC, minor centres; V, villages.

km (between Rome and its neighbours) and an average of 13 km, which implies a 6- to 6.5-km radius.[60] This again is consistent with Bintliff's model, according to which during the Bronze Age the population of villages generally ranges between 150 and 200 up to a maximum of 300–400 individuals in order to maintain face-to-face interaction.[61] Therefore, when subject to natural demographic growth, villages tend to divide in smaller communites, as indicated by the reduction in the territorial catchment area. However, these small-scale communties have to maintain exogamous practices in order to survive.[62] Then, according to Bintliff, it is possible that at some point extreme rivalry among neighbouring villages induces some of these communities to opt for endogamous practices, which requires larger agglomerations (minimum 400–500 individuals).[63] As a consequence, in order to maintain face-to-face relationships in these larger communities the creation of 'vertical roles' is necessary, so that, within the dominant class, a face-to-face social interaction is still possible.[64] In this scenario it is likely that these stable, strong and self-contained communities initiated an internal process for achieving a higher level of political autonomy and power, which led the most powerful 'villages' in each district to grow dramatically, impose their dominance on neighbouring villages, incorporate them within their territories and become proto-poleis.[65]

As observed by Bintliff, for the dominant city this would again lead to an average territorial radius of about 5–6 km (double the 2- to 3-km radius typical of a mature and stable territorial system),[66] which is very similar to the average distance between Early Iron Age Latin proto-urban centres, 6–6.5 km, mentioned earlier. This territory size, according to Bintliff, would correspond to the maximum catchment area for 'regular intense farming from a single point, implying perhaps that the leading settlement was thus enabled to farm the land of its satellites (obtained through inter-marriage and a land market) to full efficiency'.[67]

To conclude, while undoubtedly several factors contributed to proto-urban formation and urbanisation in Latium vetus (compare the several trajectories toward urbanisation analysed in Section 7.2) and, more generally, the Mediterranean, it is undeniable that Bintliff's socio-ecological model provides a very plausible explanation for the dramatic change in settlement patterns, which can be detected, for example, in Latium vetus between the end of the Bronze Age and the Early Iron Age, from an equally ranked or low-ranked system of small dispersed villages to an increasingly hierarchical and complex system of larger proto-urban centres, with dependent minor and local settlements.

6.5. MULTIPLICATIVELY WEIGHTED VORONOI DIAGRAMS

In order to model Latium vetus territorial patterns from the Middle Bronze Age to the end of the Early Iron Age, multiplicatively weighted Voronoi diagrams (MWVD) were applied. These diagrams are used to define areas of territorial dominance and to detect dynamic changes over time. MWVD are derived from planar Voronoi diagrams (or Thiessen polygons), which take into account not only distance but also settlement sizes.[68]

As explained in Section 4.3 (in the discussion of the theoretical approach to the definition of *ager Romanus antiquus*), planar Voronoi diagrams (or Thiessen polygons) allow the modelling of notional territories around centres by joining them with a line and then further joining the midpoints of these lines to form a series of boundary lines, which creates polygons (the notional territories) around each centre.[69] As previously mentioned, the problem with this methodology is that the area defined by the polygons is constituted by all the points that are nearer to the enclosed centre than any other centre.[70] This means that it takes into account only the distances between the centres, which are all considered equal irrespective of different populations (or sizes). Thus concepts of hierarchy or political dominance expressed by territoriality are denied.[71]

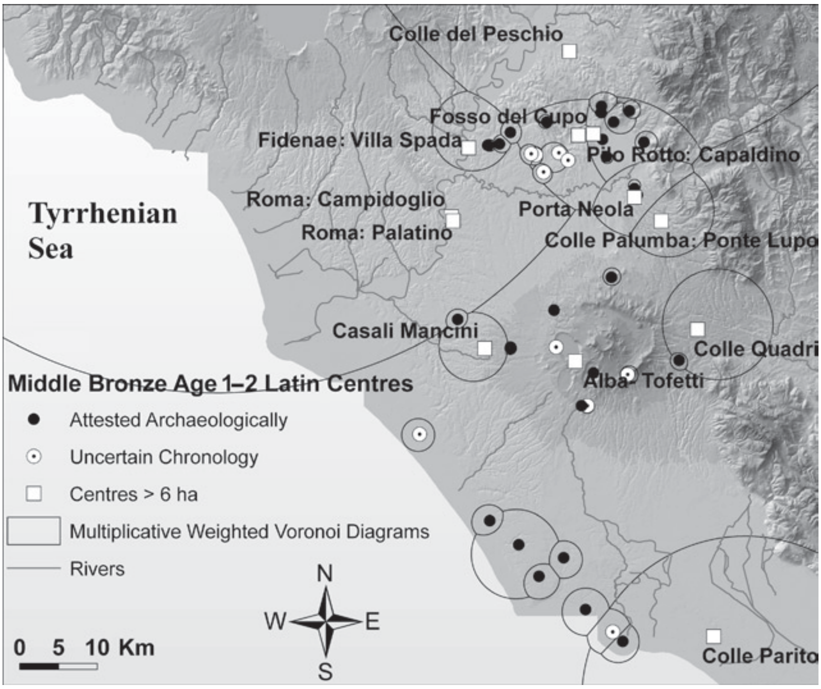
MWVD partially overcome this problem, because in this model distance is multiplied by positive weights, which take into account the settlement size.[72] More specifically, MWVD model growth, by producing a series of circles that stem from each centre and grow proportionally in relation to both distance between nearest-neighbour centres and their size, until these circles intersect one another.[73] The graphic result is a series of circular arcs around the centres, which indicate their notional area of influence. If centres surrounded by smaller arcs are included within larger arcs, this means that these centres and their territories are likely to be under the dominance of the centre which generated the larger arc. Finally, if any one centre is left without a polygon or arc, this means that its area of influence is the most extensive and its dominance is imposed on all other centres.

A limitation of this model is that arcs are generated assuming constant growth in all directions until an equilibrium is reached between adjacent generators. This means that, in the absence of external boundaries, peripheral generators can grow unchecked away from the centre of gravity of the generator configuration as a whole, and their area can become infinitely large (see, e.g., the case of Colle del Peschio in the upper right corner of Figs. 121 and 122). However, even with this flaw, MWVD appear to offer a good indication of settlements' spheres of influence and their dynamic over time.

The MWVD model is similar to (but probably slightly less sophisticated than) the X-tent originally proposed by Renfrew and Level,[74] later applied by Stoddart[75] and recently by Stoddart with Redhouse[76] and Ducke[77] within a GIS environment, which takes into account different natural and morphological variables (e.g., the terrain relief or even physical barriers such as rivers) in the calculation of territorial areas of dominance.

In the present work MWVD shape files were obtained using the program MWVD_Shape 1.0[78] and then transferred to Arc GIS 9.0. In an earlier publication of the preliminary results of this research, the MWVD analysis of Bronze and Early Iron Age Latin settlements was conducted with a less refined distinction between phases, with the Middle Bronze Age and the Final Bronze Age considered without internal distinction.[79] The new analysis confirmed some general patterns and also showed some new features, which will now be discussed.

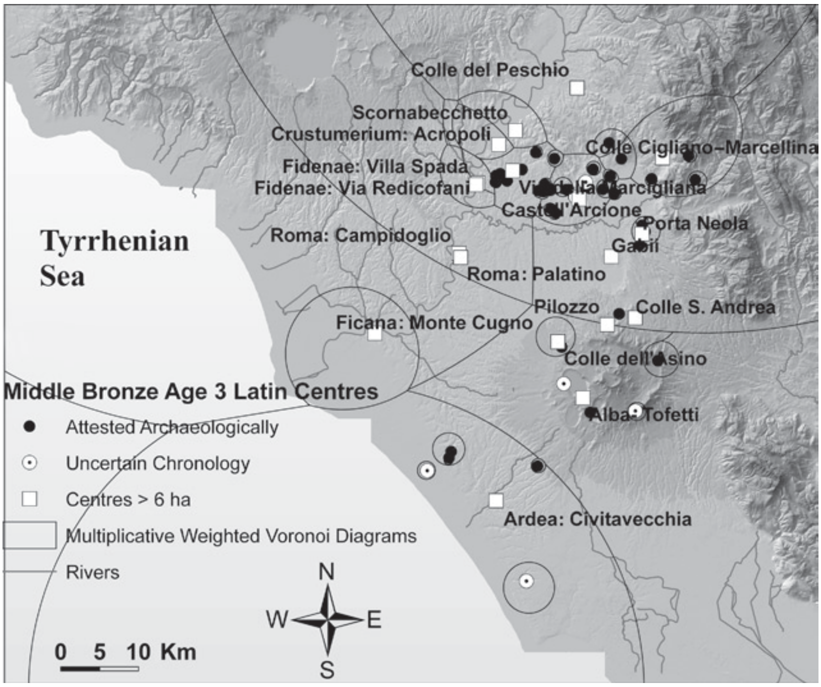
The earlier analysis showed that in the Middle Bronze Age there were approximately eight large but similarly sized districts in the region, vying for influence with some smaller, medium-sized districts in the Alban Hills area and in the northern part of the region. The new analysis, which distinguishes between Middle Bronze Age 1–2 (seventeenth to fifteenth century BC) and Middle Bronze Age 3 (fourteenth century BC), shows that there are actually only a few settlements (Rome, Gabii, the area of the Alban Hills, and the coastal zone) which seem to have some sort of 'influence' on very large territories.


Colle del Peschio
Fosso del Cupo
Fidenae: Villa Spada
Pilo Rotto: Capaldino
Roma: Campidoglio
Roma: Palatino
Porta Neola
Colle Palumba: Ponte Lupo
Tyrrhenian Sea
Casali Mancini
Colle Quadri
Alba
Tofetti
Middle Bronze Age 1–2 Latin Centres
Attested Archaeologically
Uncertain Chronology
Centres > 6 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
N
W
E
S
0 5 10 Km
Colle Parito

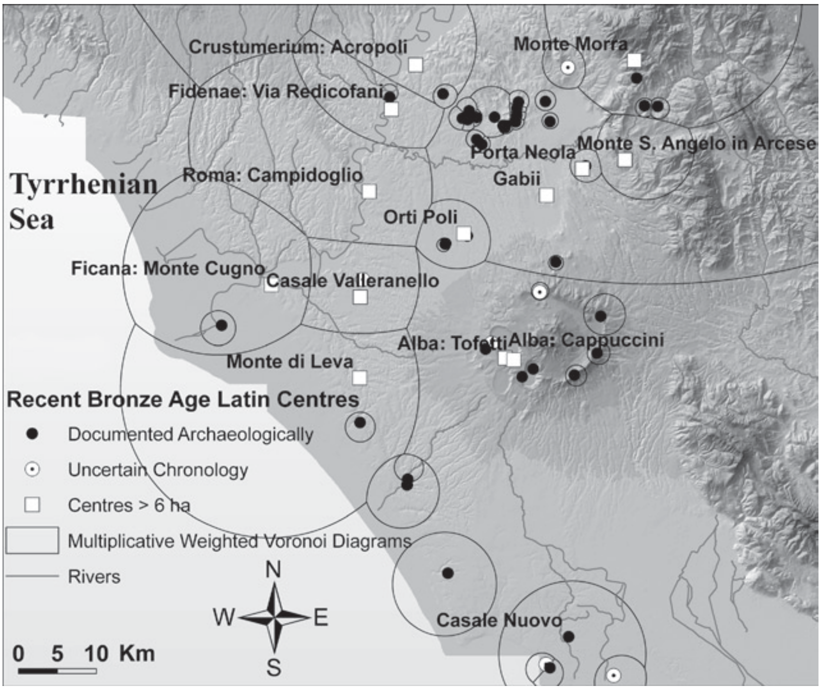
121. Latium vetus: multiplicatively weighted Voronoi diagrams, Middle Bronze Age 1–2.

In addition, two areas, the valley of the Aniene River and the coastal area between the modern cities of Ardea and Anzio, seem to have a markedly higher concentration of settlements. Along the Aniene River, the concentration of sites is particularly high, in both the older and more recent phase of the Middle Bronze Age (MBA 1–2 and 3); on the coast, between Ardea and Anzio, it is high only in the older phase (MBA 1–2). The high concentration of settlements in these two specific areas could be related to the economic activities largely practised during this time, such as fishing-hunting and transhumance. In fact, the coastal area was particularly suitable for fishing and hunting, and it has been observed that most Latin pre-historic sites near the sea were located on the borders of ancient, now dried-up lagoons.[80] In addition, the high valley of the Aniene lies at the foot of the Tiburtine Mountains and is a crucial area of confluence of the main transhumance routes from the Latin plain to the mountains.[81] Quite a few settlements are also located in the area of the Alban Hills, again on the mountains and near a lake (Figs. 121 and 122).

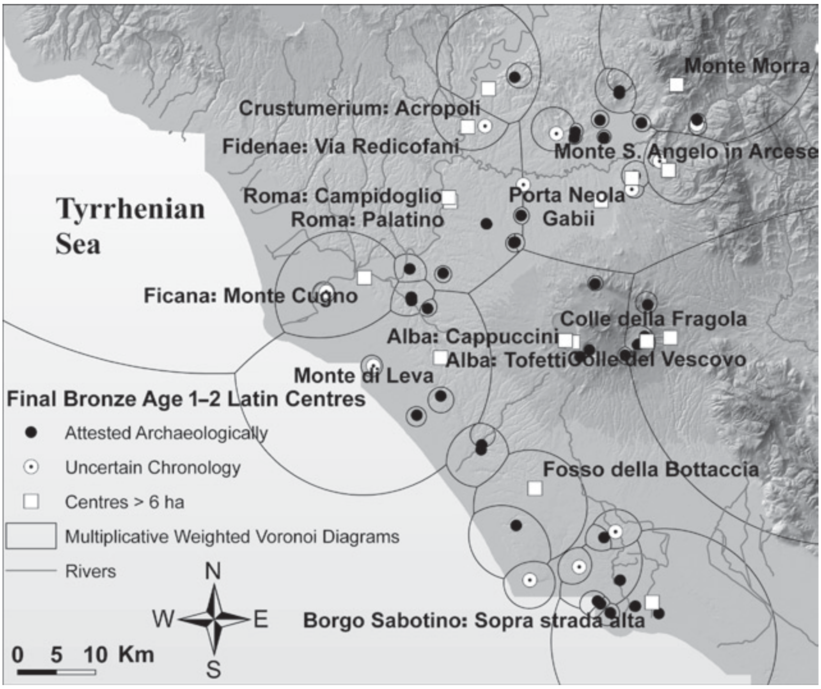
In the Recent Bronze Age (thirteenth and beginning of the twelfth century BC) both previous and new analyses seem to show the same pattern: the coastal territory is divided equally between different settlements from the mouth of the Tiber to the southern part of the region, while the rest of the territory is dominated by three major centres (Rome, Gabii and the Alban Hills) (Fig. 123). During the first part of the Final Bronze Age (FBA 1–2,


Colle del Peschio
Scornabecchetto
Crustumerium: Acropoli
Fidenae: Villa Spada
Fidenae: Via Redicofani
Villa della Marcigliana
Castell'Arcione
Colle Cigliano–Marcellina
Porta Neola
Gabii
Tyrrhenian Sea
Roma: Campidoglio
Roma: Palatino
Pilozzo
Colle S. Andrea
Ficana: Monte Cugno
Colle dell'Asino
Alba: Tofetti
Ardea: Civitavecchia
Middle Bronze Age 3 Latin Centres
● Attested Archaeologically
⊙ Uncertain Chronology
☐ Centres > 6 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
N
W
E
S
0 5 10 Km

122. Latium vetus: multiplicatively weighted Voronoi diagrams, Middle Bronze Age 3.


Crustumerium: Acropoli
Monte Morra
Fidenae: Via Redicofani
Porta Neola
Monte S. Angelo in Arcese
Gabii
Tyrrhenian Sea
Roma: Campidoglio
Orti Poli
Ficana: Monte Cugno
Casale Valleranello
Alba: Tofetti
Alba: Cappuccini
Monte di Leva
Casale Nuovo
Recent Bronze Age Latin Centres
● Documented Archaeologically
⊙ Uncertain Chronology
☐ Centres > 6 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
N
W
E
S
0 5 10 Km

123. Latium vetus: multiplicatively weighted Voronoi diagrams, Recent Bronze Age.

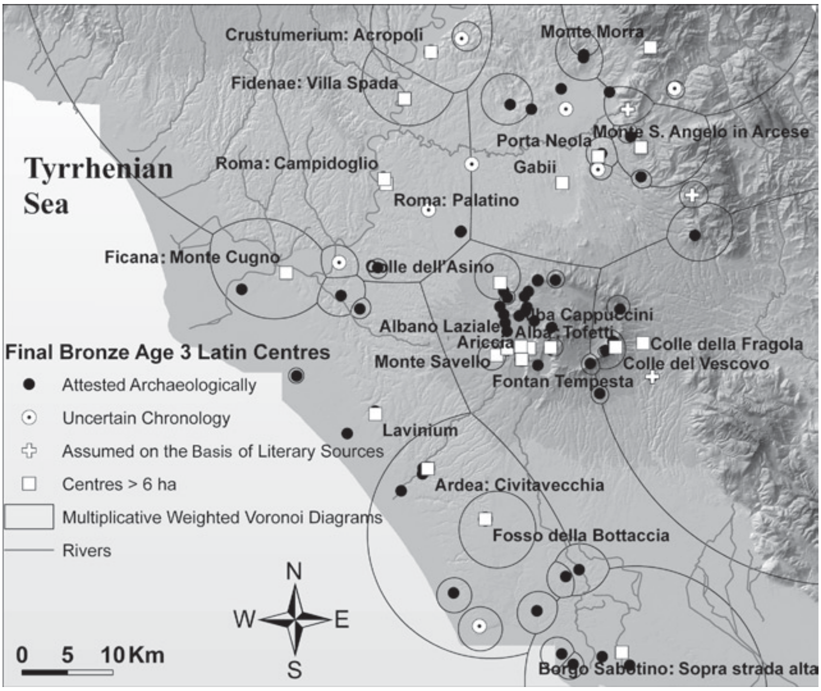

Monte Morra
Crustumerium: Acropoli
Fidenae: Via Redicofani
Monte S. Angelo in Arcese
Tyrrhenian Sea
Roma: Campidoglio
Roma: Palatino
Porta Neola
Gabii
Ficana: Monte Cugno
Colle della Fragola
Alba: Cappuccini
Alba: Tofetti
Colle del Vescovo
Monte di Leva
Final Bronze Age 1–2 Latin Centres
● Attested Archaeologically
⊙ Uncertain Chronology
☐ Centres > 6 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
Fosso della Bottaccia
N
W
E
S
0 5 10 Km
Borgo Sabotino: Sopra strada alta

124. Latium vetus: multiplicatively weighted Voronoi diagrams, Final Bronze Age 1–2.

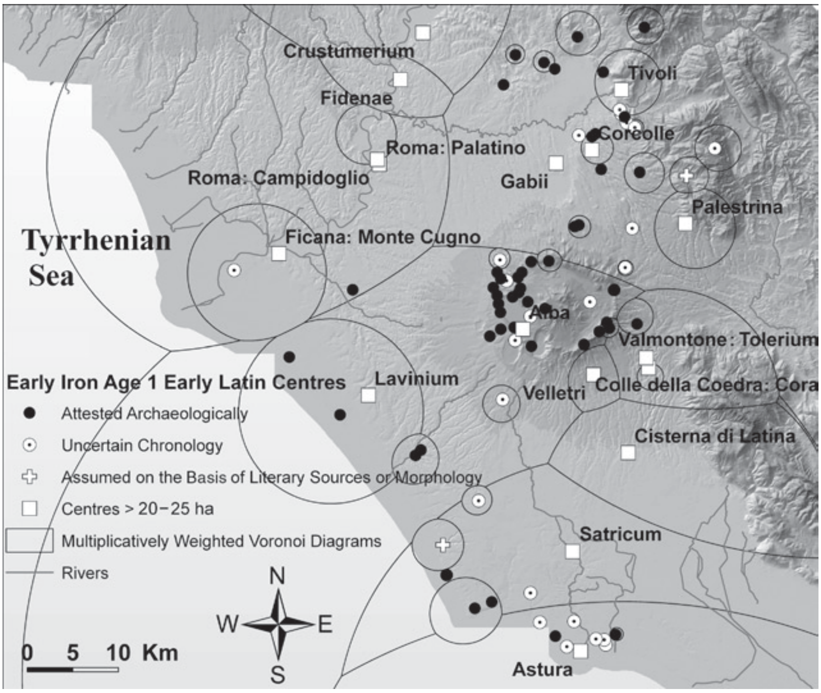
twelfth and beginning of the eleventh century BC), the same pattern as in the Recent Bronze Age seems to be present, but with an increased number of medium and small subordinate centres (Fig. 124).

By the later Final Bronze Age (FBA 3, end of the eleventh and beginning of the tenth century BC) the centre of Lavinium also seems to emerge as a major center. The present work assumes the validity of Guidi's hypothesis, according to which at least part of the big plateaux later occupied by the city of Lavinium in the Archaic Age was already partially inhabited from this time (Fig. 125). Guidi's interpretation is based on the fact that by Latial Period I burials had already been moved from within the plateaux to external areas in the surroundings, which indicates that a formal distinction between the inhabited site and areas reserved for burials, or between the 'city of the living' and the 'city of the death', had already been established.[82]

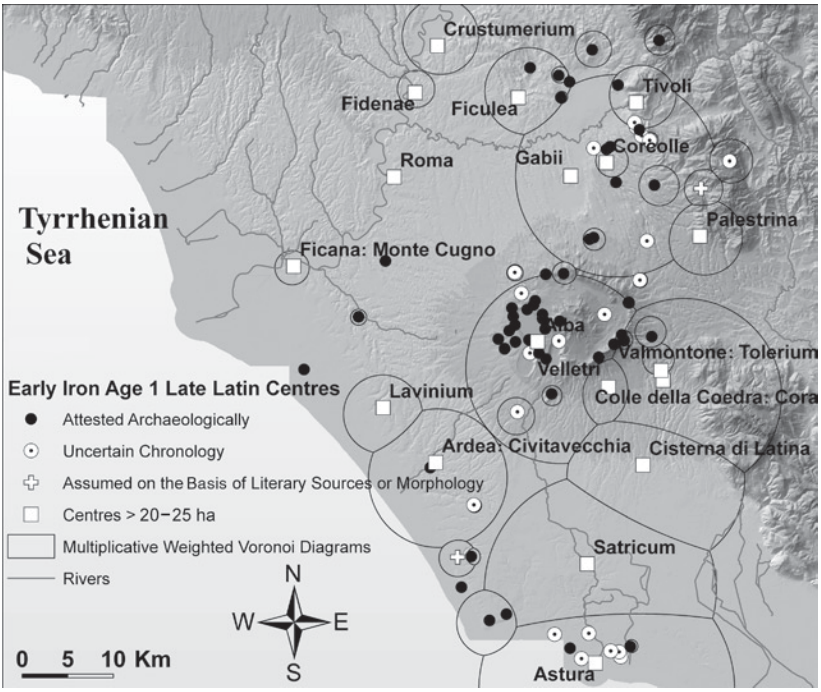
In the first part of the Early Iron Age 1, or Latial Phase IIA (second half of the tenth century BC) (Fig. 126), the territories of the large proto-urban centres start to become delineated: on the coast there are Lavinium, possibly Satricum, with the smaller Anzio and Cisterna di Latina farther inland (an extensive occupation of Ardea in this phase is not yet documented, but can only be postulated); the central area of the Alban Hills has Alba and Velletri, and possibly Corioli (documented only by literary sources) as major centres; Praeneste dominates on the west, at the foot of the Prenestine Mountains


Crustumerium: Acropoli
Monte Morra
Fidenae: Villa Spada
Porta Neola
Monte S. Angelo in Arcese
Tyrrhenian Sea
Roma: Campidoglio
Gabii
Roma: Palatino
Ficana: Monte Cugno
Colle dell'Asino
Alba Cappuccini
Albano Laziale
Alba: Tofetti
Ariccia
Colle della Fragola
Monte Savello
Colle del Vescovo
Fontan Tempesta
Final Bronze Age 3 Latin Centres
● Attested Archaeologically
⊙ Uncertain Chronology
✣ Assumed on the Basis of Literary Sources
☐ Centres > 6 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
Lavinium
Ardea: Civitavecchia
Fosso della Bottaccia
N
W
E
S
0 5 10Km
Borgo Sabotino: Sopra strada alta

125. Latium vetus: multiplicatively weighted Voronoi diagrams, Final Bronze Age 3.


Crustumerium
Tivoli
Fidenae
Corcolle
Roma: Palatino
Gabii
Roma: Campidoglio
Palestrina
Tyrrhenian Sea
Ficana: Monte Cugno
Alba
Valmontone: Tolerium
Early Iron Age 1 Early Latin Centres
Lavinium
Velletri
Colle della Coedra: Cora
● Attested Archaeologically
⊙ Uncertain Chronology
Cisterna di Latina
✣ Assumed on the Basis of Literary Sources or Morphology
☐ Centres > 20–25 ha
Multiplicatively Weighted Voronoi Diagrams
Satricum
Rivers
N
W
E
S
0 5 10 Km
Astura

126. Latium vetus: multiplicatively weighted Voronoi diagrams, Early Iron Age 1 Early.

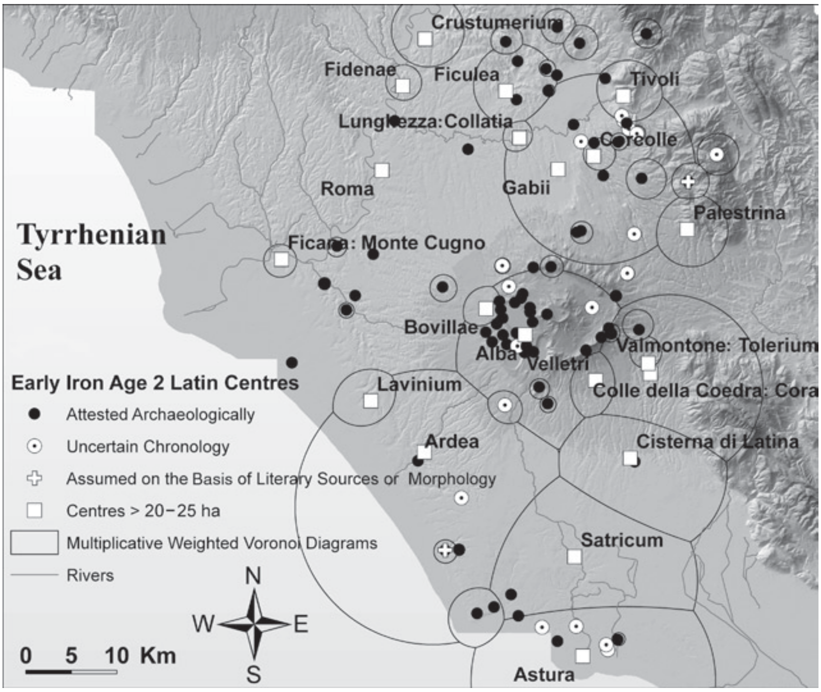

Crustumerium
Fidenae
Ficulea
Tivoli
Roma
Gabii
Corcolle
Tyrrhenian Sea
Palestrina
Ficana: Monte Cugno
Alba
Valmontone: Tolerium
Velletri
Early Iron Age 1 Late Latin Centres
Lavinium
Colle della Coedra: Cora
● Attested Archaeologically
⊙ Uncertain Chronology
Ardea: Civitavecchia
Cisterna di Latina
✣ Assumed on the Basis of Literary Sources or Morphology
☐ Centres > 20–25 ha
Multiplicative Weighted Voronoi Diagrams
Satricum
Rivers
N
W
E
S
0 5 10 Km
Astura

127. Latium vetus: multiplicatively weighted Voronoi diagrams, Early Iron Age 1 Late (note: in MWVD the dominant centre is always left without a 'polygon').

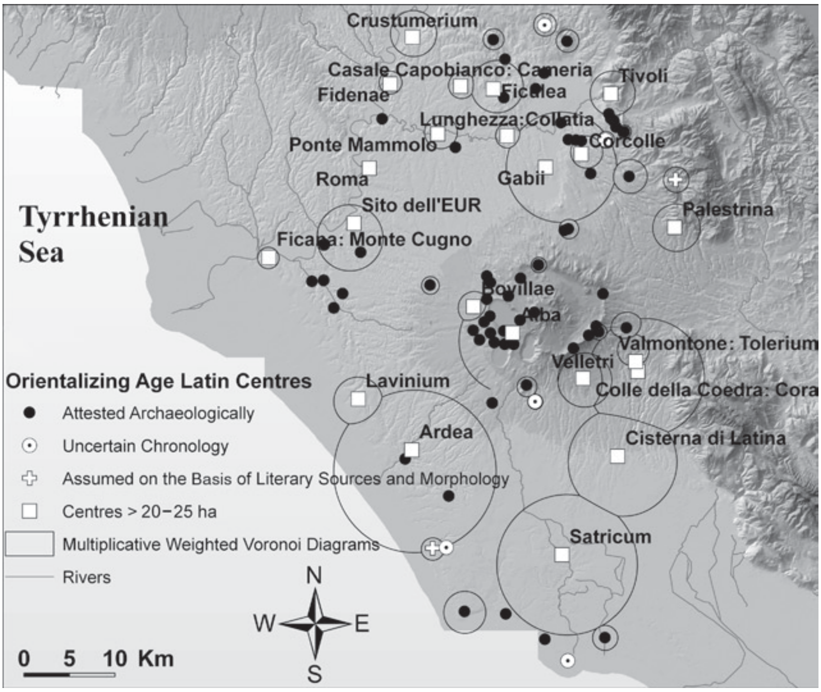
(Appenines), while in the north three major centres are dominant (Rome, Gabii and Crustumerium); other first-order centres of less importance (Fidenae, Ficulea, Montecelio and Tibur) control smaller territories.

It is remarkable that by the Early Iron Age 1 Early, or Latial Phase IIA (second half of the tenth century BC) (Fig. 126), Rome's influence already extends to all of the territory on the south bank of the Tiber, including Ficana down to Ostia.[83] In the late Early Iron Age 1, or Latial Phase IIB (first half of the ninth century BC), and in the Early Iron Age 2, or Latial Period III (second half of the ninth and first half of the eighth century BC), Rome consolidates and extends its power in the region; its influence absolutely prevails over all other centres of Latium vetus (Figs. 127 and 128). The Orientalizing Age (ca. 750/725–580 BC) and Archaic Age (ca. 580–509 BC) confirm the pattern already established during the late Early Iron Age (Figs. 129 and 130).

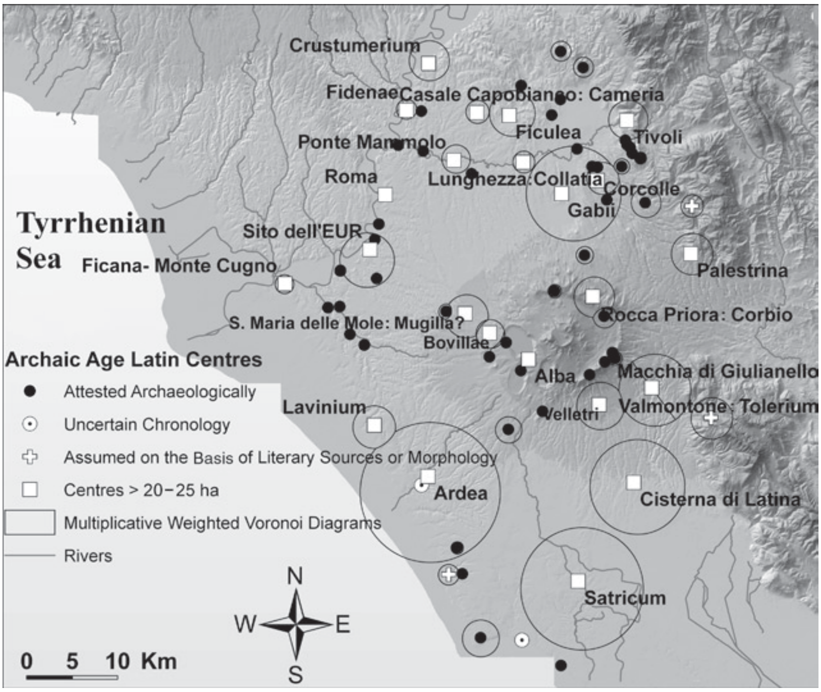
In summary, the application of multiplicative weighted Voronoi diagrams shows that three major areas of influence existed around Rome, Gabii and the Alban Hills from at least the Recent Bronze Age, if not earlier. With the Final Bronze Age and the beginning of the Early Iron Age large proto-urban centres started to develop in defined territories on the plateaux later occupied by Archaic cities. At this time the area of the Alban Hills is dominated by the presence of Alba, and this settlement, together with Gabii, seems to be more


Crustumerium
Fidenae
Ficulea
Tivoli
Lunghezza:Collatia
Corcolle
Roma
Gabii
Palestrina
Tyrrhenian Sea
Ficana: Monte Cugno
Bovillae
Alba
Velletri
Valmontone: Tolerium
Early Iron Age 2 Latin Centres
Lavinium
Colle della Coedra: Cora
● Attested Archaeologically
⊙ Uncertain Chronology
✣ Assumed on the Basis of Literary Sources or Morphology
☐ Centres > 20−25 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
Ardea
Cisterna di Latina
Satricum
N
W
E
S
0 5 10 Km
Astura

128. Latium vetus: multiplicatively weighted Voronoi diagrams, Early Iron Age 2 (note: in MWVD the dominant centre is always left without a 'polygon').


Crustumerium
Casale Capobianco: Cameria
Tivoli
Fidenae
Ficulea
Lunghezza:Collatia
Corcolle
Ponte Mammolo
Roma
Gabii
Sito dell'EUR
Tyrrhenian Sea
Palestrina
Ficana: Monte Cugno
Bovillae
Alba
Valmontone: Tolerium
Velletri
Orientalizing Age Latin Centres
Lavinium
Colle della Coedra: Cora
● Attested Archaeologically
Ardea
⊙ Uncertain Chronology
Cisterna di Latina
✣ Assumed on the Basis of Literary Sources and Morphology
☐ Centres > 20−25 ha
Multiplicative Weighted Voronoi Diagrams
Satricum
Rivers
N
W
E
S
0 5 10 Km

129. Latium vetus: multiplicatively weighted Voronoi diagrams, Orientalizing Age (note: in MWVD the dominant centre is always left without a 'polygon').


Crustumerium
Fidenae
Casale Capobianco: Cameria
Ficulea
Tivoli
Ponte Mammolo
Roma
Lunghezza:Collatia
Corcolle
Gabii
Tyrrhenian Sea
Sito dell'EUR
Ficana- Monte Cugno
Palestrina
S. Maria delle Mole: Mugilla?
Bovillae
Rocca Priora: Corbio
Archaic Age Latin Centres
● Attested Archaeologically
⊙ Uncertain Chronology
✚ Assumed on the Basis of Literary Sources or Morphology
☐ Centres > 20–25 ha
Multiplicative Weighted Voronoi Diagrams
Rivers
Alba
Macchia di Giulianello
Lavinium
Velletri
Valmontone: Tolerium
Ardea
Cisterna di Latina
Satricum
N
W
E
S
0 5 10 Km

130. Latium vetus: multiplicatively weighted Voronoi diagrams, Archaic Age (note: in MWVD the dominant centre is always left without a 'polygon').

influential than Rome. Only from the late Early Iron Age, in the course of the ninth century BC, did Rome, which grew into a very large proto-urban settlement, as attested by the shift of funerary areas from a central location near the Fora to more distant positions on the Esquiline and Quirinal Hills (see "Proto-Urban Rome' in Section 3.1), seem to overshadow all other centres and to take the lead in Latium vetus, becoming the absolutely dominant centre at the regional level.

6.6. CONCLUSIONS

While previous studies conducted in a more circumscribed area around Rome did not find a significant correlation between sites and geological formations,[84] the present analysis of the entire Latium vetus region (Section 6.2)[85] indicates a simple, but quite logical correlation between sites and good agricultural soils.[86]

The calculation of geological distribution within the catchment areas in relation to rock type distribution in the whole region showed a particular association between Bronze Age sites and clay deposits. This information has an interesting connection to the socio-economic conditions of pottery production. A high percentage of lithoid tuff combined with *tufiti* and stratified tuff indicates the particular importance over time of stable, defendable settlements.

The elevation and slope analysis of Latium vetus settlements considered in this study confirms a well-known and established trend in site locations, which had already been noted by several scholars studying settlement patterns in middle Tyrrhenian Italy. As was observed in previous studies,[87] the present analysis indicates that from the Middle Bronze Age to the end of the Early Iron Age, locations with flat and lower slopes in open plain positions are progressively abandoned, while upper slope and ridge positions on the tops of small hills and large steep tuff plateaux are chosen for stable, naturally defended settlements.

The analysis of distance of Latin settlements from modern rivers shows a strict relationship between rivers and settlement location during the Bronze Age. Bietti Sestieri[88] and other scholars[89] related this phenomenon to the increased aridity which occurred during the sub-boreal climatic period. More recently, Rajala suggested that in the Nepi area river valleys represented a more important means of communication and a natural resource of greater economic value in this period than in the Early Iron Age, when the network of roads became more important in regional communications.[90] This hypothesis seems to be consistent with results from the present study, which shows a stronger association between settlements and larger rivers in the Bronze Age than in the Early Iron Age.

The application of locational models (Sections 6.3 and 6.4) seems to confirm that the cities of the Archaic Age in Latium are the product of a long and local process of Bronze Age and Early Iron Age pre- and proto-urban formation rather than a phenomenon imported from the eastern Mediterranean through Greek colonisation.[91] In fact, both the rank-size index and the A-shape coefficient, which allow the measurement of the degree of settlement integration and hierarchical organisation expressed by the rank-size rule, show a regular and constant trend towards higher complexity, with a particular rise during the late Early Iron Age 1, or around the end of the tenth to the first half of the ninth century BC, which is also the time of settlement centralisation and nucleation with the formation of large proto-urban centres.

Similarly, the application of multiplicatively weighted Voronoi diagrams, which allows the modelling of the spheres of influence of settlements and their evolution over time, appears to indicate a clear difference in the territorial dynamics during the Bronze and the Early Iron Ages. During the Bronze Age, Latium vetus seems to show a greater territorial dynamism and competition among settlements, with a few emerging sites trying to impose their influence on neighbours, but none of them is predominant and reciprocal equilibrium seems precarious and unstable. By contrast, at the beginning of the Early Iron Age 1, the emergence of a number of predominant centres is more evident, and by a late phase of the Early Iron Age 1 a clear equilibrium among the large Latin proto-urban centres is established, which will continue with minor modification until the Archaic Age. The only difference is the growing importance of Rome; in fact, Rome had already been the dominant centre since the Early Iron Age 1 Late, or Latial Phase IIB (first half of the ninth century BC).

Calculation of the spatial efficiency index, which measures the efficiency of the location of secondary centres in relation to primary centres in a region organised as complex chiefdoms, resulted in higher values for the Bronze Age than for the Early Iron Age. This result seems to suggest that this type of analysis may not be suitable for Latium vetus during the Early Iron Age, when all other analyses show a greater level of settlement integration, hierarchy and complexity. In this sense, the application of central place theory gives more consistent results and seems to be more appropriate.

The application of central place theory, in fact, suggests that settlement distribution in Latium vetus during the Bronze Age was dictated by the 'administrative principle', which means that it was based on optimal communication and exchange between first-order centres and minor centres. During the Early Iron Age and subsequent phases, however, 'market' efficiency seemed to be the principal driving force of settlement distribution. This would be consistent with a recent theory which correlates Bronze Age Latium vetus society with a chiefdom level of organisation (based on administrative control and redistributory economy), and Early Iron Age or Orientalizing/Archaic Age communities, respectively, with early states or city-states (more commonly associated with incipient market economies).[92]

Finally, the analysis of settlement location during the Bronze Age and Early Iron Age in relation to the distance between lower- and higher-order centres shows the existence of a regular and ordered evolutionary pattern. This pattern is one of land-use efficiency and rural access to markets according to the territorial and socio-ecological model elaborated by John Bintliff for territorial dynamics in the development of urbanism in Greece during the first millennium BC and described in Section 1.2.[93]

Applying the model to Latium vetus, one observes a general evolution from Bronze Age dispersed villages, with a territorial radius of about 5–7 km, which is considered the ideal catchment area for dry-farming societies, to a much more densely populated system with settlements surrounded by territories of 3.5- to 4-km radius during the Early Iron Age 1, which corresponds to a mature but still stable territorial system. This developing territorial organisation reaches its final stage in Latium vetus during the Early Iron Age 2 and subsequent Orientalizing and Archaic Ages, when settlements encircled by territories of only 1.5- to 2.5-km radius would indicate an overpopulated system, with a very fragile equilibrium and under constant demographic stress and/or lack of resources.

However, it should be noted that by this time Latium vetus had already achieved a well-developed hierarchical organisation (cf. rank-size rule, central place theory and Voronoi diagram analyses), with primary large proto-urban centres (larger than 20–25 ha) and dependent minor centres (between 4 and 20–25 ha) and villages (smaller than 4 ha).[94] Therefore, it is plausible to speculate that primary centres were able to farm or somehow control the farming of satellite centres (minor centres and villages) located within their territories of about 6- to 6.5-km radius (the average distance between Latin primary centres is about 12–13 km). Thus they were closer to the ideal catchment area predicted by maximum land-use efficiency in traditional dry-farming societies and also, in this case, optimal access to rural markets (as suggested by the application of central place theory).

A similar development, towards an increasingly crowded and overpopulated countryside, was also observed at the territorial level in the sample area located between the territories of Crustumerium, Fidenae, and Ficulea and, later, Casale Capobianco. This last centre, in fact, seems to have been founded between Crustumerium and Ficulea during a later stage of the Early Iron Age or beginning of the Orientalizing Age and reduces the original territorial radius of the local system to between 3–4 km and 2–3 km, which according to Bintliff's model still represents a sustainable system.

Later on, with the Orientalizing and Archaic Ages, a number of new small villages are founded between primary and minor centres, reducing the territorial radius to the critical measure of 1.5–1.75 km. However, as already mentioned, during this chronological phase it is likely that minor centres, such as Casale Capobianco, and these new villages are dependent on primary centres (large Early Iron Age proto-urban centres, which will become Archaic cities, such as Rome, Crustumerium, Ficulea and Fidenae), which brings the system back to the original and sustainable radius of 5–6 km.

SEVEN

MULTI-DIMENSIONAL AND MULTI-THEORETICAL APPROACH TO URBANISATION AND STATE FORMATION IN LATIUM VETUS

7.1. INTRODUCTION

In this final part of the book, settlement patterns in Latium vetus, analysed in previous chapters on three levels (the city, the territory and the region), will be compared with other types of evidence which illustrate other trajectories towards urbanisation and state formation, such as craft specialisation, economy, cult and religion, ethnicity, land evaluation and vegetation history. These trajectories or dimensions of social evolution will be tested by applying both traditional evolutionary models and more recent multi-trajectory perspectives in order to evaluate their validity and their specific value for the study of urban formation in middle Tyrrhenian Italy.

As suggested by Gideon Shelach and discussed in more detail in Section 1.3, a multi-dimensional and multi-theoretical approach which reconciles in a dialectic discourse apparently polarised theoretical approaches (e.g., evolutionary and anti-evolutionary, multi-trajectory perspectives) provides the best means for better understanding the intrinsic complexity of reality and in particular of past reality, which is often accessible only via mute archaeological data. In addition, the socio-ecological approach to urban formation elaborated by John Bintliff for first millennium BC Greece and illustrated in the first chapter (Section 1.2) will be evaluated against the evidence available for Latium vetus and middle Tyrrhenian Italy in general, in order to explain not only how but also why urban polities emerged in this area.

7.2. TRAJECTORIES TOWARDS URBANISATION IN LATIUM VETUS

Settlement Centralisation

Scholars who believe that a long pre-urban and proto-urban development process led to urbanisation in Italy have detected in Bronze and Early Iron Age middle Tyrrhenian Italy a general and steadily increasing trend towards higher settlement stabilisation, nucleation, centralisation and demographic growth.[1]

The following characteristics have been identified in the settlement pattern of middle Tyrrhenian Italy during the Bronze Age: (1) the selection of defensible locations (hills, small plateaux); (2) the formation of micro-districts (some tens of square kilometres); and (3) the emergence of two-level hierarchies (primary settlements with metalworking activities, imports and production of prestige goods and secondary settlements).[2] For the Early Iron Age, so-called proto-urban centre formation is indicated by (1) the occupation of big plateaux, which will later develop into the cities of the Archaic Age (a revolutionary process in Etruria and a more gradual process in Latium vetus); (2) spatial separation and a formal distinction between settlements (inhabited areas on the plateaux) and necropoleis (funerary areas all around the plateaux); (3) the formation of macro-district territories; and (4) settlement hierarchy comprising at least three tiers.[3]

It has been observed that between the Final Bronze Age and the beginning of the Early Iron Age in middle Tyrrhenian Italy (Etruria, Latium vetus and Campania), small dispersed Bronze Age villages on small hilltops or open-site positions are abandoned, while big plateaux, near the sea or a river, in a strategic position (with reference both to road and river networks and to soil productivity) are chosen for domestic occupation. Simultaneously, most burials are no longer deposited within the inhabited area and become restricted to specific areas that are generally located around the plateaux.[4] This process is commonly dated to the Final Bronze Age (eleventh to the tenth century BC) in Etruria and slightly later, between Latial Phase IIA–IIB (from the mid-tenth to the mid-ninth century BC), in Latium vetus.[5]

In addition, most scholars believe that the formation of proto-urban centres was a sudden and revolutionary process in Etruria, with the abandonment within a few generations, by the end of the Final Bronze Age and the beginning of the Early Iron Age, of open sites or defended small hilltops and the convergence of village communities on the plateaux later occupied by Archaic cities. By contrast, in Latium vetus, settlements would have been limited to small acropoleis during the Bronze Age and would have expanded during the Early Iron Age to occupy all of the plateaux later occupied by Archaic cities.[6]

However, as suggested by more recent studies, closer analysis seems to reveal different developments for different sites in the same region and to emphasise more similarities, or at least to reduce the gap, between Etruria and Latium vetus. For example, according to Alessandro Guidi, all of the plateaux of Lavinium in Latium vetus might have been inhabited from a very early stage, by the end of the Final Bronze Age and the very beginning of the Early Iron Age.[7] Similarly, as noted by Marco Pacciarelli, Final Bronze Age archaeological evidence from a number of Etruscan plateaux, later occupied by large proto-urban centres and subsequent Archaic cities, appears to be more abundant than previously believed, indicating that earlier settlements in those sites might have been more significant than previously assumed.[8]

Funerary Evidence and Social Stratification

It is well known that funerary data for Early Iron Age Latium vetus are particularly abundant, and several research projects and studies have analysed these data. The pioneering study was that conducted by Pinza at the beginning of the twentieth century.[9] Since then, typological, Marxist, new archaeological and contextual approaches have all been undertaken. Among these works the publication of the excavation of the necropolis of Osteria dell'Osa near the ancient Latin city of Gabii, located on the east side of Lake Castiglione on the Via Prenestina, is fundamental.[10] Unfortunately, this remains the only fully published necropolis among those excavated during the past thirty years in Latium vetus.[11] Several interpretations have been proposed for this site and will be briefly discussed here.

Bietti Sestieri identified two original groups of people buried in a cluster of tombs in the north-west part of the cemetery. These groups, centred on a few cremation burials of men, their wives, children and relatives, had similar burial customs but were clearly distinguished by some specific features. Firstly, they had different types of *fibulae* in male tombs: serpentine *fibulae* with a disk foot for the northern group and serpentine *fibulae* with symmetrical feet for the southern. Secondly, pots produced by the two had different technical and decorative characteristics: those of the northern group were accurately made and adorned with plastic decorations, whereas those of the southern group were less accurately made, mostly undecorated and entirely without plastic decorations.[12]

Sex and age were distinguished by personal ornaments. As Christopher Smith has emphasised, infant girls were buried with personal ornaments, but not all infant boys were, which, together with the presence of rich female graves, may indicate that females were important from the time of birth, whereas males grew into importance or had to earn it.[13] Ten further groups were identified by Bietti Sestieri as belonging to either the northern or southern lineage. Bietti Sestieri interpreted these groups as 'extended families', and she believes that the community of Osteria dell'Osa at the beginning of the

Early Iron Age was based on a relatively simple 'egalitarian' kinship structure. According to her, in political terms, the community did not have any strong centralised structure but was based on the cooperation of peer kin-groups.[14]

Bietti Sestieri also suggested that a radical change in the social and political organisation of the community occurred during Latial Period III (eighth century BC) with the appearance of a new isolated group that survived for a longer period than the extended family (two or three decades). This new group, spatially separated from older burials, showed radical innovations in ritual behaviour and patterns. For instance, in this group, burials tended to be superimposed on one another, in order to emphasise their belonging to the group. In addition, full-size weapons were deposited in an old male grave (with a central position), which indicates that power was assigned to individuals regardless of their physical ability, as in the preceding period.[15]

In general terms, gender, age and family roles are not distinguished in this group and burials are relatively poor, even though a number of the female graves are relatively wealthy, with a large number of personal ornaments. The overall impression, however, is one of general uniformity and a strong emphasis on affiliation with the group (spatial isolation of the group from other burials in the necropolis and superimposition of burials within the group). According to Bietti Sestieri this burial group represented an early stage of the Latin *gens*, which gradually eroded and finally overcame the internal solidarity of the community's kinship-based component units.[16]

The interpretation of the later phase of the necropolis of Osteria dell'Osa has been almost universally accepted, but the supposed egalitarian organisation of the earlier community has been called into question by several scholars. Pacciarelli, for instance, observed that not all men had access to status at the same time and for the same duration of time and that, besides hereditary status, women of the same age could show either the presence or absence of wealth indicators (amber and/or faience necklaces, distaff or knife). Therefore, he agrees with Bietti Sestieri that the Osteria dell'Osa groups are extended families constituted by a few men with wives, children and relatives, as well as some servile individuals. But he believes that there were some differences in access to status, even though economic and social differentiation was still limited and solidarity was still very strong among members of the same lineage.[17]

As demonstrated in a previous work, my interpretation of the social organisation of the community of Osteria dell'Osa, based also on its contextualization in the general framework of all funerary evidence available from the entire region of Latium vetus, is similar to Pacciarelli's understanding of the same evidence.[18] In fact, social tensions and distinctions were not completely absent during the Final Bronze Age or the very beginning of the Early Iron Age, as demonstrated by the enactment of an 'expensive' cremation ritual for few male and female burials and by the existence of a few exceptional warrior and rich female burials dated to the tenth century BC.[19] Therefore, it is possible that an egalitarian ideology which was dominant in the recently formed proto-urban centres overshadowed social differentiation for almost a century (or three to four generations). And only during the eighth century BC did social hierarchy become evident archaeologically, with the explosion of sumptuary consumption by urban aristocracies.[20]

However, European Bronze Age burials of chiefs are increasingly being seen less as funerary celebrations of exceptional individuals than as group ritual performance of wider communities.[21] Therefore, as Vanzetti recently admitted, the debate about Osteria dell'Osa and the social organisation of early Latin communities is far from being definitively resolved.[22]

Socio-Economic Approach

Christopher Smith adopted a socio-economic approach to describing the evolution of self-defined communities and an authentic aristocratic class from the ninth to the sixth century BC in Latium vetus.[23] In his work, Smith does not explicitly mention the proto-urban model, and dates the evolution from a pre-urban stage to a proper urban stage only from the seventh to the sixth century BC.[24] However, his interpretation of the evolution of Latin society from the tenth to the sixth century BC has many points in common with the long-term perspectives (proto-urban model elaborated by the Roman school of pre- and proto-history)[25] according to which urban formation was the final stage of a long autonomous process, accelerated but not determined by external influences (Phoenician and Greek colonisation).

According to Smith, Latin society was differentiated and only apparently 'egalitarian' from the very beginning of the Latin culture (tenth century BC).[26] More evident signs of social differentiation increase dramatically during the eighth century BC and explode by the end of the Orientalizing Age with the so-called phenomenon of princely tombs, which testify to the importation of luxury goods from the eastern Mediterranean and the adoption of the Greek *symposium* (drinking feast) in central Italy.

These cultural changes may have been the result of a different socio-economic organisation and a greater surplus of production in this area.[27] On the one hand, Smith emphasises different elements of strong continuity from the Final Bronze Age to the Orientalizing Age (continuous demographic growth, social stratification, settlement centralisation and nucleation); on the other hand, he recognises a great catalytic factor in the involvement of middle Tyrrhenian Italy, and Latium vetus in particular, in a long trade circuit of core-periphery relationships through the Mediterranean basin.[28]

While the process of settlement nucleation and centralisation, which led Etruscan communities towards urbanisation, was induced in the region to the north of the Tiber around the tenth century BC by an increasing exploitation of mineral resources induced by a growth in the demand for metals, the situation in Latium vetus, which lacked such resources, was quite different.[29] Already existing aristocracies in Latium vetus were induced to produce greater surpluses (probably based mainly on land exploitation, improved by the introduction of iron tools and olive/vine cultivation) by the desire to be part of the luxury item consumption system which was shared by Mediterranean people from east to west.[30]

My own view, already presented in the context of Latin Orientalizing princely burials (Fulminante 2003), is similar to Smith's perspective.[31] Smith correctly states that there is a marked continuity from the Final Bronze Age to the Orientalizing Age and that during this time self-defined Latin communities grew, which led to mature urban centres ruled by established aristocracies by the seventh to the sixth century BC. In contrast to Smith's interpretation, this 'preparation' phase would be more accurately described as proto-urban[32] to emphasise that this was a crucial time when the main features of urbanisation (centralisation and nucleation of settlements, social stratification, craft specialisation and standardisation, centralisation of cultural activity, etc.) that would mature in later urban centres began to appear and develop.

Craft Specialisation

Among the socio-political changes (social stratification, centralisation, ethnic differentiation, etc.) which occur in the evolutionary process towards urbanisation and state formation, craft specialisation and increased division of labour are generally considered essential.[33] Johann Rasmus Brandt and Albert Nijboer have linked craft specialisation and economic centralisation to urbanisation and state formation in central Italy, with a particular focus on Etruria and Latium vetus.[34] These authors have applied different theoretical models, but both formulated similar craft specialisation processes in Latium vetus from the eighth to the fourth century BC.

Adopting Dean E. Arnold's model, Brandt proposed the following pattern for the production of pottery found at the site of Ficana-Monte Cugno: in the ninth to the beginning of the eighth century BC semi-sedentariness in Latium vetus was accompanied by household pottery production (i.e., pottery produced within a household for its own use). By the end of the eighth and during the seventh century BC, the formation of the first fortified settlements, the adoption of poly-culture (with the introduction of olives and wine), the beginning of social stratification (documented by the appearance of lavish burials) and demographic pressure created new socio-economic conditions favourable to the development of household industries for pottery (i.e., pottery produced within a household for its own use, but also for sale).[35]

By the end of the seventh and during the sixth century BC, a population increase, agricultural intensification and technological improvements (such as a greater diffusion of the potter's wheels and proper kilns) led to the beginnings of a workshop industry (pottery produced exclusively for sale on a full-time basis throughout the year).[36] According to Brandt, pottery craft specialisation was paralleled by a similar development in house building, which evolved from simple, small huts to big, complex houses with stone foundations, during the second half of the seventh century BC.[37]

Nijeboer, similarly, connects population growth (documented by the exploitation of the countryside), social stratification and pre-monetary early market exchanges (based on fixed exchange values through quantification) with workshop nucleation and craft specialisation and shows that they were well established during the course of the seventh century BC (this stage corresponds to Brandt's workshop industry for pottery). Subsequently, from the late sixth and the fifth century BC, large industrial workshops (a development which Brandt did not detect at Ficana) are archaeologically attested at Populonia, Marzabotto and Acqua Acetosa Laurentina. Like Brandt, Nijboer finds that the evolution of pottery production from households to workshops parallels the development of domestic architecture from huts to houses.[38]

In addition, he emphasises that metallurgy production underwent a similar process of increased specialisation. During the Late Bronze Age and the beginning of the Early Iron Age, metalworking was a part-time activity of resident smiths, which operated within a regional or inter-regional network for the exchange of locally exploited raw material. But during the eighth century BC, significant changes occurred in metalworking. Bronze *fibulae* started to be produced in series, and copper alloys tools and weapons were replaced by iron objects.[39] By the end of the eighth and during the seventh century BC, in fact, an increase in the number of iron tools (spearheads, swords, knives, spits, horse bits, components of chariot wheels) is attested in Latin burials, especially in association with luxury grave goods, and in the votive deposit at Satricum. This means, according to Nijboer, that metals were manufactured locally.[40]

Another important technological innovation in metalworking during the eighth and seventh centuries BC was the introduction and diffusion of granulation, an elaborate and highly specialised decorative technique which necessitated a high level of technological knowledge and craft specialisation.[41] The metal industry quarter excavated at Populonia and dated to the sixth century BC clearly demonstrates that by this date metalworking, at least in some parts of central Italy, had advanced to a specialised and standardised mass production.[42] At the same time, according to Nijboer's study, metals were devalued and the new standardised mass production presumably implied a decline in the social position of craftsmen.[43]

Brandt and Nijboer correctly relate craft specialisation to socio-economic changes which occurred in central Italy during the late Early Iron Age. Nevertheless, these changes, which led to urbanisation and state formation, occurred slightly earlier than Brandt and Nijboer assume. Giovanni Colonna, Paolo Carafa, Anna Maria Bietti Sestieri and Cristiano Iaia all demonstrate that some important typological and technological innovation was already occurring in Latial Period III, during the late ninth and the eighth century BC. From her detailed study on the necropolis of Osteria dell'Osa, Bietti Sestieri concluded that during Latial Period III there was already a shift towards standardisation and specialised craftsmanship: at this time pots were still handmade, as were those of the previous phases, but there was a marked decrease in the overall range of *impasto* ware shapes and decoration.[44]

Carafa, in his study of *impasto* pottery production in Rome, noticed that vessel shapes typically associated with *symposia*, such as plates, *ollae*, *kylikes* and small cups, are already produced in red and dark *impasto* from the third quarter of the eighth century BC.[45] In addition, the production of light red *impasto* along with brown and dark *impasto* (probably already produced on potter's slow wheels, especially in the case of fine *impasto*), implies, according to Colonna and Bietti Sestieri, that updraft kilns, with separated firing and cooking chambers, were already commonly adopted from Latial Period III onwards (eighth century BC).[46]

Finally, the local production in Rome of purified clay (*argilla figulina*), which implies the use of the fast wheel and reflects improved workshop conditions, is postulated by Colonna for Latial Period III on the basis of the presence of quite a few vessels of local shape found in Rome and Latin necropoleis that cannot be assigned to Veientane production.[47] A few wheel-turned items have also been found in the necropolis of Osteria dell'Osa, such as a globular *amphora*, painted in brown with geometric patterns, and a high-handled cup of purified clay. According to Bietti Sestieri the characteristics of these vessels (of local shape), belonging to a class well known in both Latium vetus and Etruria, point to a Greek derivation.[48]

Colonna, Carafa and Bietti Sestieri's view is supported by Iaia's work on Early Iron Age sheet bronze vessels in central and northern Italy. According to this author an emerging market exchange system can already be postulated by the late Early Iron Age for small objects such as cups, whose production becomes increasingly standardised.[49] Moreover, the introduction, around 770–750 BC, of a more standardized technique entailing the use of plaques and studs is accompanied by the production of new *symposium* vessel shapes (flasks and short-necked vessels, or *amphorae*) and by an increased production of some items (shields) which were already being produced with the old technique involving points and studs.

This increasing standardisation of production is related, according to Iaia, to the peculiar socio-political development of southern Etruria (the production area) in the late Early Iron Age.[50] In the socio-political context of a mature proto-urbanisation and early urbanisation process, the consumption of luxury bronze sheet items was probably no longer limited to chief warriors and their families but expanded to include all high-status members of the *gens* and their notable *clientes*. According to Iaia, it is reasonable to postulate that at this time, some luxury products (such as small cups) were no longer restricted to a mere gift exchange economy but started circulating in a developing market exchange system.[51]

Rituals and Cult Places

In a number of publications over the past twenty years, Alessandro Guidi has demonstrated an interesting connection between the formation of proto-urban centres and important developments in the ritual activities of Early Iron Age Latium vetus.[52] While in the Middle and Late Bronze Age cult places were respectively represented by natural caves and open-air deposits (springs, lakes, rivers, pits, etc.), during the Early Iron Age some special huts within the settlement area seem to acquire the role of cult places for the whole civic community.

The beginning of the Early Iron Age (Latial Phases IIA and IIB, mid-tenth to mid-ninth century BC) is still dominated by cult places in open spaces, but from the late Early Iron Age (end of Latial Phase IIB and Latial Period III / Latial Sub-Phase IVA1, or mid-ninth to the end of the eighth century BC) different votive deposits and hut structures are known which show a significant continuity with later temples of the seventh to sixth century BC.[53] In particular, hut structures have been found under the Archaic temples of Velletri (S. Stimmate), Satricum and Ardea (Colle della Noce); in addition, some objects dated to the second half of the eighth century BC have been identified among later objects in the votive deposit of the Capitoline Hill in Rome,[54] and the probable cult hut of Vesta has been identified in the very heart of the city.[55] According to Guidi, the existence of central cult places which served the whole community in the eighth century BC is a sign of incipient urbanisation.[56]

By contrast, Christopher Smith connects urbanisation with the stone temples of the seventh to sixth century BC and distinguishes them from ritual activity in open-air deposits of older times. Even though Smith admits the existence of social status and ritual activities conducted by the head of the clan group (*gens*) acting for the community already in the ninth century BC, he tends to interpret votive deposits of the seventh century BC as an expression of a more 'individual' and 'private' kind of religion and to underestimate the importance of the huts which preceded stone temples.[57]

It is true that the appearance of a cult hut ('natural' and simple) and the experience it evokes are significantly different from the visual impact in the landscape created by a stone temple. However, these primitive cult huts, which could have had decorated walls and embellished roofs (as shown by funerary hut-urn models), should not be underestimated. They may have had the same function and significance as civic cult places as did the later stone temples of the Archaic Age.

Another theme investigated by Jelle Bouma and Elizabeth van't Lindenhout,[58] Andrea Zifferero[59] and Simon Stoddart with Corinna Riva[60] is the function of sanctuaries as liminal places and markers of territorial boundaries. Bouma and van't Lindenhout compared the spatial relationship between settlements and cult places in Latium vetus from ca. 700 to 300 BC, applying Renfrew's peer polity approach. Even though the authors express some doubts about the use of Thiessen polygons, especially for the older phase, the results of this analysis showed that around 700 BC the emphasis is on the centres of settlements rather than on the territory, because cult places are generally located within the settlement area. However, from ca. 600 BC new cult places appear at the border of two polygons.[61]

Bouma and van't Lindenhout relate these boundary sanctuaries to a tendency to define spaces and environments, which they say is also evident from the construction of fortifications and ditches around settlements. From ca. 500 BC., starting from the Pontine region and expanding over a wider area, the direct relationship between sanctuaries and settlements (both with their centres within the urban area or with their territories) became weaker. This means, according to the two authors, that the equilibrium of the peer polity between Latin settlements became less stable.[62]

The approach of Bouma and van't Lindehout is interesting and their ideological connection between boundary sanctuaries and settlement delimitations is correct, but their study could be refined. Firstly, Thiessen polygons could be calibrated (e.g., according to settlement size, as done in the present work). And secondly, settlement walls, which define urban areas, and possibly boundary sanctuaries, which define rural territories, had already appeared in Rome in the eighth century BC (see Chapter 3; Section 4.2).

Finally, the function of sanctuaries as land markers of civic, political and ethnic boundaries demonstrated for Etruria by Stoddart and Riva[63] and applied by Zifferero[64] to the exceptional case of Rome and the *ager Romanus antiquus* (for which accounts from literary sources can be integrated with the archaeological evidence) still has to be investigated and verified for other cities within Latium vetus.

Ethnicity and Identities

Guy Bradley has summarised current scholarship on ethnicity, urbanisation and state formation in central Italy[65] and has demonstrated that these three issues are closely related.[66] As Bradley has emphasised, the Italian scholarship on ethnicity in pre- and proto-historic Italy has been dominated by Massimo Pallottino (an influential scholar of post-war Italian Etruscology). Pallottino observed the coincidence between Early Iron Age regional material cultures of central Italy (which emerged and differentiated themselves from the Middle and Late Bronze Age cultural homogeneity) with the distribution of later inscriptions and territories of the historical people as they are recorded in ancient literary sources.[67] The formation of Early Iron Age ethnic groups has been subsequently linked to socio-economic developments (increased social complexity, state formation and urbanisation) focusing on the more developed areas of Etruria and Latium vetus.[68]

Bradley's warnings against this 'common sense' view are correct. He has argued that the traditional equation between material culture and ethnicity can no longer be simplistically accepted and that boundaries among different material cultures in central Italy are often blurred and overlapping, as in the case of Veii and Rome or Umbrians and Etruscans along the Tiber valley. In addition, he has correctly emphasised that the reliability of literary accounts of such ancient times (Final Bronze Age and Early Iron Age) are highly questionable and that most examples of ethnic group self-designations come from the second half of the first millennium BC and hardly pre-date 600 BC.[69]

Nevertheless, it is fair to say that many Italian scholars are aware of these theoretical problems and regard Pallottino's traditional view with care and criticism. As Bradley himself recognised, for example, Renato Peroni has adopted a problematic approach to ethnicity,[70] while Carmine Ampolo has suggested the idea of ethnic fluidity of a central Italian cultural *koine*.[71] More recently, Alessandro Guidi has emphasised the fluidity of cultural boundaries based on material culture.[72] Similarly, Gabriele Cifani has studied the complex dynamics between ethnic groups along the Tiber frontier by studying changing settlement patterns in central Italy from the Bronze to the Archaic Age.[73] And Francesco di Gennaro has emphasised similarities between Crustumerium (Latin) and Veii (Etruscan), which faced one another from opposite sides of the Tiber River.[74]

Finally, as suggested in a recent article with more details,[75] new insight into the debate on ethnicity in pre- and proto-historic Italy could be provided by the socio-anthropological approach to ethnic identity originally elaborated by Frederik Barth, in combination with the principle of 'redundancy' proposed by Geoff Emberling.[76] This theory holds that ethnic identity is a social and cultural construction (Fredrik Barth); there has to be a material (fashion, food, material culture, etc.) or immaterial element (common origin myth, language, etc.)[77] as the basis on which a group identifies itself ('us') as opposed to others ('them'). Therefore, if boundaries among groups are repeatedly identified by differences in several of these elements ('redundancy' principle), it is more likely that they actually indicate genuine ethnic confines.[78]

Archaeological Land Evaluation (RPC Project)

The RPC Project (Regional Pathways to Complexity, Landscape and Settlement Dynamics in Early Italy) led by the University of Groningen is aimed at studying the processes of centralisation, early urbanisation and colonisation during the first millennium BC in three Italian landscapes: the Pontine region, which is the coastal plain in southern Latium; the Sibaritide, in northern Calabria; and the Salento Isthmus, in Apulia.[79]

This supra-regional project emphasises the role of indigenous populations in the development of ancient urbanisation, which was only partially affected by Greek and Roman influences. Building on new and old data from surveys and excavations, the project focuses on three types of studies, which are being conducted by PhD students: archaeological land evaluation, the ethnoarchaeological study of pottery production and a landscape GIS survey with an emphasis on marginal areas such as wetlands and highlands.[80]

So far only one study has been completed, in the Pontine region in southern Latium, and will be briefly summarised in this section. A detailed landscape reconstruction was combined with information on Bronze and Iron Age farming technology and soil and cultivation requirements of ancient crops (land use requirements) by Ester van Joolen, in order to calculate ancient land suitability for farming (archaeological land evaluation). To test the model, these results were evaluated against pollen analyses and archaeological evidence.[81]

Van Joolen classified subsistence farming as the most profitable in the Pontine Plain during the Bronze Age. During the Early Iron Age most landforms remained unsuitable for more intensive agriculture, but an environmental change occurred that modified land-use conditions. Specifically, fluvial-colluvial deposition transformed the wet marshes of the Amaseno into drier lands, marginally suitable for all Iron Age uses (simultaneous cultivation of cereals with olives or grapes, permanent cultivation and subsistence farming).[82]

These results from the land evaluation analysis were tested against archaeological data in two surveyed areas (the Lago di Fogliano / Doganella di Ninfa and the Monte Lepini Surveys), which showed that archaeological data could be suitably compared with archaeological theory. However, one element of contrast was quite interesting. Many Early Iron Age sites were found on the slope deposits of the Doganella di Ninfa Survey, which were classified as unsuitable or marginally suitable for agriculture (except for subsistence farming). As van Joolen pointed out, 'Apparently for reasons other than the cultivation of food, such as safety, people decided to settle at these locations, taking the additional effort to grow crops for granted'.[83]

The use of land predicted by the evaluation model and tested against pollen analyses gave a good correlation for the Bronze Age. For that phase, agricultural and pastoral activities were recorded in the vicinity of Mezzaluna and probably on the Lepini foothills, while cereal cultivation was identified archaeologically on the volcanic slopes of the Alban Hills and small-scale wheat cultivation was attested in the vicinity of Lago Fogliano.[84] For the Early Iron Age, however, although land evaluation predicted a slightly improved suitability for the cultivation of olives with cereals, pollen diagrams did not show any sign of these products.[85]

In fact, the only evidence for cereal cultivation (barley and wheat/rye) in this period was found in the volcanic area and at Colle S. Lorenzo. In addition, farming activity was suggested only by secondary agricultural indicators in the Lago di Fogliano area.[86] Van Joolen concluded that, although the early cultivation of cereals and legumes has been demonstrated by research conducted in the Pontine Plain (agricultural activities occurred at least from the Neolithic Period), poly-culture (as well as iron tools) would have been introduced to this region only during the Archaic/Roman Age.[87]

Vegetation History

An interesting attempt to link crop processing with state formation processes in central Italy was undertaken by Laura Motta. Her PhD study focused on charred macro-remains sampled from several key sequences in Rome and its broader hinterland, dated from between the ninth and sixth centuries BC. Preliminary results from the analysis of samples, which were taken during the excavation conducted at the north-eastern slope of the Palatine, have been published.[88]

The assumption of this study is that the effect of urbanisation and state formation processes should be reflected in the pattern of archaeo-botanical assemblages. For instance, an homogenisation of crop processing, such as a shift from a great variety of crops to a more homogeneous situation (e.g., a larger proportion of grain), could be connected to the transition from small domestic production to a centralised food distribution system.[89] The study reveals that a general increase in grain can be detected in the seventh and sixth centuries BC, but the situation is not homogeneous. According to Motta, the heterogeneity among the samples signifies the co-existence of different circuits of crop processing in the same community. It is likely that traditional, pre-existing, kin-based production systems survived and co-existed with a new state-based economy. Therefore, Motta suggests that a heterarchical model would be more appropriate to explain Rome's proto-urban complexity than the old dominant Marxian modes of production.[90]

Another important issue of agricultural history related to state formation is the introduction of viticulture and oleoculture in central Italy. It has been suggested that these practices demand stability, organisation, surplus resources (time, money and labour) and probably even private property, as these crops take time to become established. Because they require a certain level of socio-political and economic development, they are generally assumed to be linked with proto-urban and urban stages.[91]

The discovery of grape pips and olive stones in ninth- and eighth-century settlement contexts (Gran Carro, Bolsena and Cures Sabini near Rieti),[92] along with the presence of vases for holding liquids and drinking pots from funerary contexts, has been interpreted by some scholars as hinting that viticulture and oleoculture were practised early in central Italy.[93] Nevertheless, while the cultivation of domestic grapes and olives is well attested in southern Italy, the introduction of poly-culture in central Italy is not definitely proved or dated by that point. Most scholars agree that during the Early Iron Age in central Italy there was a shift from a mixed subsistence farming system (Bronze Age) to an entirely new agricultural system, which included olive and vine cultivation and was organised as a series of regional markets (end of the Early Iron Age), but the finer stages of this process are not clearly established.[94]

Regarding poly-culture, as already mentioned there are some archaeological hints that wine and olives were produced in central Italy and that iron ploughs were known from at least the eighth century BC (a small plough model is present in a bronze incense burner from the necropolis of Olmo Bello in Bisenzio),[95] but scholars prefer to be cautious and claim that while iron tools and commercial wine and oil production had probably already been introduced by the end of the eighth to the seventh century BC, they did not become common until the sixth century BC onwards.[96]

7.3. TESTING EVOLUTIONARY AND MULTI-TRAJECTORY MODELS OF SOCIAL EVOLUTION AGAINST THE ARCHAEOLOGICAL EVIDENCE FROM LATIUM VETUS

In this section Gideon Shelach's multi-dimensional and multi-theoretical approach will be adopted (cf. Section 1.3), and traditional evolutionary theories and more recent multi-linear and multi-trajectory perspectives will be tested against the archaeological evidence available for Bronze Age and Early Iron Age Latium vetus. In this way, it will be possible to capture a greater variety of views and more nuanced aspects of past reality, which is complex and multi-faceted. In addition, it will be possible to verify the general validity of these theories as well as their specific value for gaining a better understanding of the socio-political and economic history of early Rome and the surrounding region. First, however, commonly used socio-political categories such as 'chiefdom' and 'state', which from the evolutionary perspective are widely accepted [97] but which in multi-linear approaches are seriously questioned,[98]

Table 23. Social evolution of Italian pre- and proto-historic communities according to Peroni's model and evolutionary models

Model	Eneolithic	Bronze Age			Early Iron Age	Orientalizing Age
		Early Bronze Age	Middle Bronze Age	Recent–Final Bronze Age		
Evolutionary models	Tribe	Chiefdom 1, simple (?)	Chiefdom 2, simple (?)	Chiefdom 3, complex	Early state	City-state
Peroni's model	Lineage groups, no stable rank	Lineage groups, stable rank	Lineage groups, stable rank, territorial communities	*Gentes- clientes* organisation (pre-urban level)	*Gentes- clientes* organisation (proto-urban level)	*Gentes- clientes* organisation (urban level)

will be compared with the model of socio-political and economic evolution developed for early Italy by Renato Peroni[99] and described in Section 1.2.

Evolutionary Perspectives on Urbanisation in Bronze and Early Iron Age Latium Vetus

According to Peroni, the category of 'chiefdom' (used by US anthropologists to describe different forms of socio-political organisations identified in Europe from the Late Neolithic until ca. 800 BC, when the first states began)[100] is too vague to describe all of the stages of social organisation that Bronze Age communities passed through, as described in Section 1.2 and summarised in Table 7. However, a number of scholars, including Graeme Barker, Andrea Carandini, Alessandro Guidi and Colin Renfrew, have tried to correlate evolutionary categories such as 'chiefdoms' and 'states' with different stages of social development in Bronze and Early Iron Age Italy (Table 23).

In particular, it is possible to detect some archaeological indicators of so-called simple chiefdoms, such as an incipient settlement hierarchical organisation and ritual consumption of wealth, in the Early and Middle Bronze Age central Italian communities.[101] However, it is only with the Recent and Final Bronze Age that clear archaeological evidence correlates with 'chiefdom societies' (or 'complex chiefdoms', according to Guidi and Carandini),[102] and they appear to be undeniable in the archaeological record of middle Tyrrhenian Italy. According to these scholars, by the Recent and Final Bronze Age it should be possible to detect larger populations with higher settlement densities, greater accumulation of wealth in metal reserves (hoards), increased subsistence production, improved craft specialisation and exchange, clearer indicators of elite–commoner segmentation (exceptional burials and princely mansions) and elite control over the means of production (both land and craft) and exchange or corvée labour.[103]

Finally, most scholars agree that the development of large Early Iron Age proto-urban centres can be correlated with the formation of early states,[104] according to the peer polity interaction model elaborated by Renfrew for southern Etruria.[105] This in turn would develop into the city-state model, most likely pioneered in the western Mediterranean by Rome around the middle of the eighth century BC.[106]

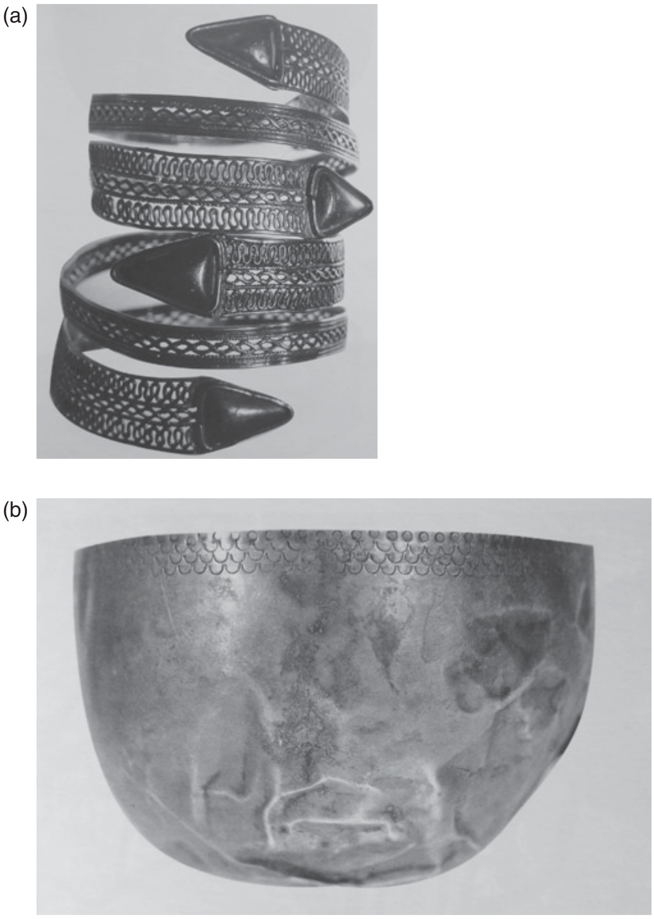
Divergent Trajectories towards Urbanisation in Bronze and Early Iron Age Latium Vetus

As shown in the preceding section, both Peroni's model and evolutionary models (with chiefdom and state categories) can be adopted to describe the evolution of Bronze and Early Iron Age societies in pre- and proto-historic middle Tyrrhenian Italy. However, as acknowledged by Peroni himself, such models imply a 'considerable degree of schematization'.[107] Several scholars have pointed out that evolution is not always unilinear or constantly uniform over time, but several trajectories might be identified which do not always occur at the same pace, and often there are blurred boundaries between subsequent phases.[108]

With reference to Latium vetus, for example, the transition from the end of the Bronze Age to the beginning of the Early Ion Age is marked by a continuous and progressive trend towards greater hierarchy and settlement integration in the territorial pattern, which is apparently not matched by a similar increase in social complexity, as mirrored by the funerary evidence. In fact, the settlement pattern shows a constant increase in the degree of efficiency of sites' spatial location and in the degree of integration among settlements of different hierarchical levels, with a particular rise starting from a later phase of the Early Iron Age 1 (Latial Phase IIB, first half of the ninth century BC) (see the rank-size index and A-shape coefficient graphs, Figs. 103 and 104).

However, the funerary evidence for the same period points towards a decrease in the complexity of social organisation as mirrored in the wealth of grave goods and the elaboration of tomb structures. As argued in an earlier work (Fulminante 2003),[109] in this period no single burial is unequivocally associated with high status and wealth symbols, such as the hut urn, the terracotta statuette, weapons in male burials or spinning and weaving instruments in female burials. During Latial Phases IIA and IIB (second half of the tenth to the first half of the ninth century BC), those signs of power and rank appear to be spread among different individuals.[110]

By contrast, in the preceding phase, Latial Period I (tenth century BC), the symbols of political power (complete suits of armour, including a sword) and religious power (knife, incense burners and double shields) are clearly associated with a few male burials of particularly high status, which have been interpreted



131. Rocca di Papa: princely tomb of Vivaro, Latial Sub-Phase IVA1 (ca. 725–700 BC). (a) Gold hair decoration; (b) silver hemispheric cup. (From Arietti & Martellotta 1998, tables A and C.)

by Anna De Santis as belonging to 'chiefs' with both political and religious power.[111] In addition, a rich infant female burial from Le Caprine, near Tivoli, has been considered by several authors as an indication of hereditary status.[112]

In the subsequent phase, Latial Period III and the beginning of Latial Period IV (eighth century BC), warrior graves and rich female burials indicate the middle stage in the formation of a stratified society, as demonstrated by princely graves appearing by the end of the eighth and beginning of the seventh century BC[113] (Fig. 131). Interestingly, throughout the eighth century BC, in a number of these exceptional burials, 'traditional' power symbols, such as weapons in male and spinning and weaving instruments in female burials, are added with an increasing number of the 'latest' prestige paraphernalia ('status symbols'), such as *flabella* (fans), chariots, and banquet and *symposium* implements, required by the new aristocratic style of consumption common among the Mediterranean elites of the Orientalizing Age.[114]

This specific pattern presented by the funerary evidence of Early Iron Age Latium vetus could be interpreted using the categories of 'heterarchical versus hierarchical organisations'[115] or 'corporate versus network modes',[116] as discussed in 'Multi-Trajectory (Anti-Evolutionary) Approaches' in Section 1.2. In particular, taking into account the chracteristics of corporate- as opposed to network-mode societies identified by Gary Feinman (see Table 3),[117] it is clear that the funerary evidence of Latial Period II (Early Iron Age 1, from the mid-tenth to the mid-ninth century BC) could be ascribed to the first category, while that of Latial Periods III and IV (Early Iron Age 2 and Orientalizing Age, from the mid-ninth to the end of the seventh/beginning of the sixth century BC) belong to the second (Table 24).

As mentioned earlier, the grave goods found in burials of the Early Iron Age 1 show a more balanced accumulation and a more even distribution of wealth. Symbols of power are not concentrated in the hands of a few exceptional individuals, but seem to be shared by different members of peer status (corporate mode society). In addition, affiliation with a group, most likely linked by blood relations (possibly an enlarged family), is greatly valued by members of the community at this time, as demonstrated by the lineage groups identified by Bietti Sestieri in the necropolis of Osteria dell'Osa (Gabii) on the basis of the material culture.[118]

The emphasis on staple economy and food production seems to be indicated by the presence, among grave goods, of miniature jars and barrels (generally interpreted as representative of big food storage containers), possibly also indicating the practice of redistributive economy. Other features identified as typical of a corporate mode, such as monumental ritual spaces, are lacking in the archaeological evidence of Latial Period II, but it must be said that funerals, with their impressive choreography associated with the cremation ritual (in use at that time), can in themselves be considered public displays of social status.

Lavish burials at the end of the Early Iron Age and the Orientalizing Age (end of the eighth and the seventh century BC) clearly indicate a network-mode society. It is evident that princely tombs of the Orientalizing Age indicate a specific concentration of wealth in the hands of aristocratic elites, who possessed the land and imposed tributes and passage taxes and probably controlled commerce too.[119] The sumptuous, precious male adornments and female jewellery, prestige goods (metal vases and other precious objects often imported from Greece or from the Near East), and banquet and *symposium* implements demonstrate that members of this class indulged in amazingly ostentatious consumption during their lifetimes and in incredibly sumptuous self-glorification at the ineluctable time of death.[120]

The importance of lineal kinship and affiliation with a *gens* is also confirmed by family monumental *tumuli* (earth mounds), such those excavated at the

Table 24. Characteristics of corporate and network modes tested against the archaeological evidence in Latium vetus

Corporate mode	Early Iron Age 1 Latium vetus, archaeological evidence
More even wealth distribution	Political (weapons) and religious (knife, female terracotta miniature statue) power symbols in male and female burials
Shared power arrangements	
More balanced accumulation	
Control over knowledge, cognitive codes	
Corporate labour systems	
Emphasis on food production	Miniature jugs and barrels in tombs
Staple finance	
Monumental ritual spaces	Funerary pyres and assemblages for crematory rites
Segmental organisation	
Power embedded in group association/affiliation	Hidden 'inequality'; lack of emphasis on single individuals
Symbols of office	
Broad concerns with fertility, rain	
Network mode	**Early Iron Age 2–Orientalizing Age Latium vetus, archaeological evidence**
Concentrated wealth	Quantitative and qualitative wealth in few burials
Individual power	
Ostentatious elite adornment	Female and male princely burials
Ostentatious consumption	Male and especially female jewellery
Prestige goods	Banquet and *symposium* services
Personal glorification	Imported and precious metal vases and objects
Princely burials	Princely burials
Patron-client factions	*Gentes-clientes*
Attached specialisation	Craft specialisation and production standardisation
Wealth finance	Market economy
Lineal kinship systems	Family *tumuli*
Power inherited through personal glorification	

See Feinman 2001, table 2, p. 160.

necropolis of Laurentina Acqua Acetosa, at the southern border of the territory of Rome. Most rich burials are found at the centre of the *tumulus*: they are typically princely burials, sometimes containing more than a hundred objects, vessels and luxury goods (power symbols, prestige items, chariots and carts, shields in both female and male burials, banquet implements and drinking services). At the edge of the *tumulus* are found poorer tombs, probably those of *clientes* associated with the family.[121]

The application of the corporate versus network categories, combined with a long-range contextual analysis of both the funerary and settlement evidence, demonstrated that while it is possible to identify burials with signs of rank and hereditary status in Latial Period I, Latial Period II is a crucial time in terms of settlement centralisation and nucleation and in the development of a structured hierarchy and a greater and more articulated settlement integration. Therefore, the apparent absence of hierarchy in Latin burials during Latial Period II might be due to a masking 'egalitarian' ideology (corporate mode or heterarchical organisation) embraced by the ruling elites of the newly formed proto-urban centres rather than a genuine lack of social stratification.[122]

Multi-Linear Conjunctions in the Process of Urbanisation in Bronze and Early Iron Age Latium Vetus

At the beginning of this section, traditional evolutionary categories, such as 'chiefdom' and 'state', combined with the model of social evolution elaborated by Peroni, were used to describe the global trend towards higher complexity observed in several dimensions of the archaeological record (settlements, burials, material culture, vegetal samples, etc.) of central Italy during the Bronze and Early Iron Ages. Subsequently, a closer analysis of some of these dimensions within a more defined chronological and geographical context – namely, a comparison of social developments in Bronze and Early Iron Age Latium vetus – emphasised inconsistencies and diverging trajectories. While the analysis of Latin settlement patterns shows a continuous trend towards higher complexity and hierarchical organisation, with a particular rise in the late Early Iron Age 1 (Latial Phase IIB, first half of the ninth century BC) (see Sections 6.3, 6.4 and 6.5; Figs. 103 and 104), the funerary evidence for the same period seems to indicate a rather egalitarian social organisation, with no burial distinguished by either its content or its structural architecture.

This apparent inconsistency encouraged scholars to find alternative explanations and to adopt different frameworks of interpretation. By approaching the questions from different perspectives, it became clear that the apparent modesty of Latin burials during the Early Iron Age 1 (Latial Phases IIA and IIB, from about the mid-tenth to the mid-ninth century BC) is due more to an ideological attitude than to an actual absence of social hierarchy.[123] Thus a multi-trajectory approach makes it possible to clarify how things actually worked, to resolve apparent inconsistencies and to overcome the limitations of the global (and therefore intrinsically generic and schematic) evolutionary perspective.

In the rest of this section, the concept of 'multi-linear conjunction', adopted by Gideon Shelach within a multi-dimensional and multi-theoretical framework to investigate social evolution in north-eastern China between the fifth and first millennia BC[124] (see Section 1.3), will be applied to the archaeological evidence of Bronze and Early Iron Age Latium vetus. The aim will be to demonstrate that both traditional evolutionary theories and multi-trajectory models provide different but complementary perspectives, with balancing rather than mutually exclusive points of view.

As Shelach suggested, social system developments can run along different 'dimensions' of socio-political evolution, such as economy, technology, ideology and inter-regional interactions, which might be more or less visible in different aspects of the material culture and which do not always proceed in the same direction and at the same pace. However, it can be observed that these different dimensions of social evolution eventually converge at critical nodes, which Shelach called 'multi-linear conjunctions', normally in conjunction with major socio-political changes in the entire system.[125]

Table 25 summarises and compares a number of dimensions of analysis or trajectories of social evolution, ranging from socio-political organisation to settlement patterns, to craft and labour specialisation, technology subsistence and economy, to more symbolic and cognitive aspects such as ethnicity, art, religion, literacy and specialised knowledge. These dimensions of social evolution have been selected for analysis because they have been adopted both in traditional evolutionary perspectives and in more recent multi-trajectory approaches.[126] However, this list does not cover all possible dimensions of social evolution. While, as Peroni suggested, the Recent Bronze Age undoubtedly represents a 'qualitative leap forward', particularly when the dimensions of technology and metal production, consumption and exchange are considered,[127] it is probably the Final Bronze Age, and in particular the passage to the Early Iron Age, which marks the most dramatic 'conjunction' of socio-economic dimensions of social evolution for pre-historic Latin communities.

By this time (according to slightly different modalities in different regions of central Italy, which are still not understood in full detail and in reciprocal relations),[128] people seem to move from small defensible settlements on high places (hilltops or acropoleis), with an average size of a few hectares (generally no more than 5–6 ha and exceptionally between 10 and 20 ha) and a population of a few hundred individuals, to large nucleated and centralised settlements (which will be the cities of the Archaic Age) on large plateaux, ranging in size from a minimum of 20–25 ha to a maximum of 180–200 ha, with a population of thousands. In the following section, it will be shown that this radical increase in size and dramatic change in scale, which also implies a completely different socio-political organisation of the communities, can be convincingly explained by the application of the socio-ecological model developed by Bintliff for Greece.[129]

These new proto-urban centres controlled larger territories, ranging from 1,000 to 2,000 km², and functioned as 'central places' for minor centres and villages within a territorial settlement hierarchy of at least two or three tiers,[130] which developed into a three- or four-tiered system during the Early Iron

Table 25. Trajectories of social evolution in Latium vetus from the Bronze Age to the Archaic Age

Trajectory	Early, Middle & Recent Bronze Age	Final Bronze Age, Early Iron Age 1 Early/Late, Early Iron Age 2 Early/Late	Early Iron Age 2 Final, Orientalizing Age	Archaic Age
Political system (Peroni's model)	Pre-urban	Proto-urban	Early urban	Fully urban
Political system (evolutionary models)	Simple (?) chiefdom	Complex (?) chiefdom	Early state	State, centralisation, bureaucracy
Social organisation	Ranked society, clans, chiefs	Ranked society, community chiefs, status by birth	Stratified society	Class society
Economic organisation	Redistributive economy?	Redistributive economy?	Elite gift exchange, incipient market economy	Market economy
Wealth accumulation	Beginning of hoards	Explosion of hoards	Princely burials	Public & sacred architecture
Settlement pattern	Permanent settlements, choice of defensible locations	Large, defended, nucleated settlements (big plateaux)	Large, defended, nucleated settlements (big plateaux)	Large, defended nucleated settlements (big plateaux)
Settlement hierarchy	One-/two-level hierarchy	Two-/three-level hierarchy	Three-/four-level hierarchy	Three-/four-level hierarchy
Territorial organisation	Limited direct territorial control, blurred inter-community boundaries	Large territories, definition of community boundaries	Institutionalisation of city-state boundaries	Extension of city-state boundaries (imperialism)
Craft & labour specialisation	Pottery household production, itinerant metal craft specialists	Village craft specialisation, community-integrated craft specialists	Class craft specialisation? Pottery ateliers, aristocracy-attached craft specialists	Class craft specialisation, 'industrial' workshops
Evolution of technology	Handmade pottery, bronze technology	Handmade pottery standardisation, iron technology (luxury items)	Wheel-made pottery, updraft kilns, iron technology (tools)	Standardised large-scale workshop production
Agricultural & pastoral economy	Intensification of progressive agriculture & pastoralism	Integrated specialisation: intensive lowland agriculture & highland pastoralism	Intensification of cereal cultivation, introduction of olive and vine cultivation, herding rationalization	Olive and vine cultivation, diffusion and intensification (poly-culture)
Ethnic definition & social integration	Homogeneous peninsular material culture	Regional material cultures, inter-community networks & marriages	Regional material cultures, inter-community networks & marriages	Multi-ethnic, open and integrating polities
Elite art & architecture	Permanent huts, large-scale community works (drainage channels, etc.)	Permanent huts, elite funerary 'art'	Particularly elaborated huts & settlement earth walls (public buildings?), communal civic spaces, elite funerary 'art'	Stone temples, city walls & domestic architecture, elite & state art
Religion	Natural cult places	Religious political chiefs (?)	Intra-mural cult places, state religion & priestly class?	Stone temples, state religion & priestly class

Age and the Orientalizing Age[131] (cf. Fig. 111, bearing in mind that, within Latium vetus, settlements larger than about 20–25 ha seem to work as proto-urban 'central places' of an 'early-state' district, as shown by the application of Voronoi diagrams, Figs. 127 and 128).

The dramatic trend towards higher complexity in the settlement pattern is also confirmed by the significant increase in the values of the rank-size index and the A-shape coefficient (Figs. 103 and 104), which are used to measure the degree of settlement integration and hierarchical organisation at the regional level. Similarly, the increased number of exceptional male and female burials, including those of children, dated to the passage between the end of the Final Bronze Age and the beginning of the Early Iron Age, testifies not only to the appearance of 'vertical political and religious roles'[132] but possibly to the beginning of permanent social differentiation and hereditary status.[133]

The explosion of bronze hoards during the Final Bronze Age and sometimes their unusual location within settlements[134] seems to confirm the formation at this time of permanent elite segments with restricted access to considerable amounts of wealth. Admittedly, it is very difficult to establish whether those hoards were in the hands of the wider village community or under the control of a socially dominant group,[135] especially considering that exceptional single burials could be interpreted as symbolic representations of wider communities rather than depositions of individual chiefs.[136] However, as already mentioned, the appearance of exceptional child burials seems to indicate the intent of 'transmitting status by birth', which implies the existence of permanent elites.[137]

Various economic activities show a marked expansion at this time. With the Final Bronze Age, metal specialists seem to have been more permanently integrated within stable communities,[138] while the increasing standardisation of pottery decoration has been considered by some scholars to be an indication of the diffusion of 'full-time' pottery specialists, possibly already from the tenth century BC.[139] From this time onwards, coastal sites specialising in the production of certain materials and/or food processing (which can be defined as 'village craft specialisation') are found, both in Etruria[140] and in Latium vetus (Casale Nuovo).[141]

Similarly, the use of metals (including iron, known on the isle of Elba and in Tuscany from the eleventh century BC)[142] increases exponentially for the production of prestige items first and then of working tools as well.[143] Finally, with the Final Bronze Age, there is evidence for intensification of the agricultural system in the form of new crops and a growing importance of animal secondary products.[144] By this time, the distinction between Apennine highland communities, which specialise in pastoralism and short-distance seasonal transhumance, and lowland communities, which practise intensive agriculture, seems to be complete.[145]

Turning to more symbolic and cognitive dimensions of social evolution, it should be noted that during the Final Bronze Age different regional material cultures (or cultural *facies*, according to terminology commonly used in Italian scholarship and originally formulated by Hermann Müller-Karpe)[146] start to appear, a phenomenon that contrasts with the general uniformity of the previous Subapennine (thirteenth century BC) and Proto-villanovan (twelfth and eleventh century BC) phases. It has been observed that boundaries between different groups are often blurred, and close contact between communities along these boundaries is frequent.

However, it cannot be denied that the areas of diffusion of different regional material cultures remarkably follow rather closely the limits of the Augustan regions, indicated by ancient authors as the borders enclosing historical Italic ethnic groups.[147] As Peroni emphasised, 'The cultural *facies* of the Italian Early Iron Age, each considered both as a whole and with regard to its salient features, are strongly conditioned by the fact that their [*sic*] are the property of precise ethnic units. This conditioning extends to the economic sphere, too, in the sense that particular market conditions are created by the combination of 'national' taste and local individual proto-urban centres, therefore, we can in a sense speak of wider 'national' markets and all that they might mean in terms of technology, metrology and so on'.[148]

All socio-political, economic and symbolic-cognitive 'dimensions' or 'trajectories' of evolution identified for this analysis, whose origins are rooted in the Bronze Age and which experience a significant acceleration between the Final Bronze Age and the beginning of the Early Iron Age, seem to reach full maturity by the end of the Early Iron Age and the beginning of the Orientalizing Age. In particular they seem to converge into a single conjunction at the end of the Early Iron Age and the beginning of the Orientalizing Age, around the middle of the eighth century BC, which signals the beginning of urban organisation and is correctly considered to mark the threshold between pre-history and history.

At this time, the formation of large proto-urban centres, which began at the end of the Final Bronze Age and the beginning of the Early Iron Age, matures; moreover, settlement boundaries are more clearly defined by the abandonment of sites at the foot or along the slopes of the plateaux[149] and are sometimes physically marked by earthen fortifications.[150] That a high degree of settlement integration and hierarchical organisation was attained by the end of the Early Iron Age at the regional level is confirmed by the values of the rank-size index and A-shape coefficient, which show a continuous trend towards higher complexity from the end of the Final Bronze Age and the beginning of the Early Iron Age to the Archaic Age (cf. Figs. 103 and 104).

An advanced stage of social stratification is also demonstrated by the accumulation and consumption of sumptuary goods, which were deposited in the well-known princely burials.[151] Craft specialisation and division of labour are indicated by the introduction of new technologies (e.g., the potter's wheel and updraft kilns[152] and granulation in the crafting of precious metal objects[153]) and a higher degree of standardisation among metal products, which probably indicates a shift from mere gift exchange circulation to an incipient market exchange economy.[154] Intensive cereal cultivation and the introduction of poly-culture (oil and wine production) is generally admitted even by cautious scholars.[155]

But it is probably more on cognitive and symbolic levels that the great innovation of the eighth century BC can be fully appreciated. It has already been mentioned that Alessandro Guidi correctly emphasised the continuity of cult activity of several Archaic urban temples of Latium vetus back to the Early Iron Age (at least from the eighth century BC), in the form of cult huts or votive deposits.[156] This relocation of cult places from natural ritual loci (rivers, mountains, lakes), during the Bronze Age and the very beginning of the Early Iron Age, to urban contexts, during the advanced Early Iron Age, indicates an intention by urban elites to enhance their authority by extending their control over religious power.[157]

This is certainly plausible, but it is also intriguing that these monuments may have represented one of the material embodiments of the political unity of the new urban settlements, where the power, previously shared and contested among peer aristocrats, is finally unified under the control of a single *rex*, who holds both religious and political power. As demonstrated in Chapter 3, this process is hypothesised to have taken place in Rome, where in the course of the eighth and the beginning of the seventh century BC a series of monuments, such as the earthen fortification wall around the Palatine, a regal residency, cult places and a space for assemblies point to the existence of a centralised power, governing a unified body of citizens.

As shown in Chapter 3, by the middle of the eighth century BC, Rome, in extent and physical appearance, was, like many other centres in Latium vetus, not very different from what it had been at the beginning of the Early Iron Age. At that time, a revolution in scale had occurred in the settlement pattern, with a dramatic decrease in the number of small Bronze Age villages and the formation of large proto-urban centres with large territories and dependent minor centres and villages. But by the mid-eighth century BC, as indicated also by the convergence of many dimensions of social evolution on the regional scale, that process of 'urban gestation' had matured and the 'city-state' was born in middle Tyrrhenian Italy. By the Orientalizing Age and, even more so, the Archaic Age, Rome had undoubtedly become an 'international', multi-ethnic polity, fully integrated into inter-regional and Mediterranean networks and open to cultural diversity and integration, as the emblematic legend of the king Tarquinius Priscus and his father, Demaratus, mythically reflects.[158]

Bintliff's Socio-Ecological Model Applied to Urbanisation in Latium Vetus

As already discussed, the analysis of the distribution of settlements in relation to their hierarchical level (city, minor centre, village, local settlement or site), conducted in Latium vetus at both the territorial ('Site Distribution and Hierarchical Levels: Territorial Sample' in Section 5.4) and regional levels ('Site Distribution and Hierarchical Levels: Regional Sample' in Section 6.4,), revealed the presence in different chronological phases of certain territorial modules that are consistent with the dynamic territorial model elaborated by Bintliff.[159] Specifically, it has been observed that, during the Bronze Age, Latium vetus is dominated by a settlement system with territories of about 5- to 7-km radius (if only settlements larger than 5–6 ha are considered 'primary centres' of a territorial district; see Fig. 38 and the discussion of Thiessen polygons in the definition of the *ager Romanus antiquus* in Section 4.3). This territorial module, as emphasised by Bintliff's model, corresponds to the ideal resource zone (5–6 km) predicted by traditional catchment analysis for the subsistence of pre-industrial farming societies.[160] In addition, according to Bintliff's calculations, this area would be able to sustain the population of villages between 5 and 6 ha, with the resources and technologies available to Bronze Age societies, which again is consistent with the average size of Latin Bronze Age primary centres.[161]

Subsequently, during the Early Iron Age 1, at the regional level this territorial organisation seems to be broken up into a system of settlements with territories of about 3–4 km radius (cf. Figs. 115, 116 and 119). However, at the local level in the sample area, this seems to happen slightly later, by the end of the Early Iron Age 2 and the beginning of the Orientalizing Age, with the foundation of Casale Capobianco midway between Crustumerium and Ficulea. According to Bintliff, this reduction of the territorial radius is due to natural demographic growth and represents a mature but still stable territorial organisation.

Finally, with the Early Iron Age 2 at the regional level and the Orientalizing and Archaic Ages at both the regional and local levels, the territorial system is reduced further to territorial quanta of about 1–2 km (for the sample at the territorial level see Figs. 73 and 74; and for Latium vetus see Figs. 117, 118 and 120), which indicates demographic and/or resource pressure.[162] However, just as was observed by Bintliff for Archaic Greece,[163] in Latium vetus, by the end of the Early Iron Age (and possibly even before, in any case slightly earlier than in Greece), a hierarchical system had developed and smaller competing settlements had been incorporated as dependent satellites within the territories of large proto-urban centres (future Archaic cities; see the application of multiplicatively weighted Voronoi diagrams, Figs. 128, 129 and 130).

As already mentioned, Latin proto-urban centres have an average distance from each other of 12–13 km, which means an average territorial radius of about 6–6.5 km, bringing the system back to a stable and sustainable territorial organisation. This territorial radius, according to Bintliff,[164] would have been sustainable for Early Iron Age centres of about 20–30 ha, which is the average size of most primary Latin proto-urban centres, apart from a few exceptions, such as Rome, Gabii, Ardea, Lavinium and Crustumerium.

With respect to settlement size and demographic calculations, Bintliff's model also offers a convincing explanation of how and why by the end of the Final Bronze Age and the beginning of the Early Iron Age, Latin and Etruscan 'egalitarian' small villages were superseded by large and 'increasingly stratified' proto-urban societies. According to Bintliff's model, Bronze Age villages, generally between 1–2 and 5–6 ha, and therefore with a population between 100–200 and 500–600 individuals, assuming an average density of 100 inhabitants per hectare,[165] would have been consistent with the figures predicted by the anthropological model of face-to-face social interaction, but they would have to have practised exogamy in order to ensure their survival.

According to anthropological studies, 'natural' face-to-face social interaction is normally maintained in communities of about 150 individuals,[166] above which threshold horizontal sub-divisions into distinct social groups[167] or vertical roles have to be created in order to maintain the face-to-face relationship among the corporate group;[168] but the minimum number for endogamic communities has been calculated to be 400–500 individuals.[169] While during the Bronze Age the sizes of Latin communities are still within these figures, the situation is very different by the end of the Bronze Age and the beginning of the Early Iron Age.

During the course of the Bronze Age, it is possible to observe in middle Tyrrhenian Italy a steady trend towards more stable, centralised and densely populated communities, which is fully realised by the end of the Final Bronze Age and the beginning of the Early Iron Age. At this time the formation of large nucleated proto-urban centres expanded from a minimum of 20–25 ha (predominantly in Latium vetus) to a maximum of 180–200 ha (mainly in southern Etruria) with populations of the order of thousands. These population figures, which largely surpass the threshold of face-to-face social interaction, would have been appropriate to ensure community survival by the practice of intra-community marriages (endogamy).

Several scholars have suggested that at the end of the Bronze Age a regime of collective land exploitation came to an end, to be gradually replaced by 'private property'.[170] Therefore, it seems plausible that small Latin and Etruscan village communities, which had to practise exogamy in order to survive, might have considered establishing closer links between some villages and eventually merging into a larger endogamous community, with a particularly favourable defensible location, such as large tuff plateaux in the vicinity of the sea or navigable rivers and with fertile land all around.[171]

As suggested by Bintliff's model, the need to maintain face-to-face social interactions within the larger community would stimulate the formation of a restricted dominant class, with the consequent generation of 'vertical roles' and 'social stratification'. It is probably not by chance that at the same time exceptional burials, with evident archaeological indicators of 'rank' and 'status', start to appear in various locations of Latium vetus, strongly suggesting the beginning of stable social differentiation and perhaps indicating even the transmission of 'privileged status' by birth.[172]

7.4. FURTHER RESEARCH PERSPECTIVES

Traditionally, the dominant diffusionist approach has connected the introduction of urbanisation in the western Mediterranean with the so-called orientalising phenomenon. According to this model, the idea of the city-state was transferred via Greek and Phoenician colonists from the eastern to the western Mediterranean together with skills, ideas, fashions and goods, such as the Cypro-Phoenician bowls and other products found in the 'princely' burials of Etruria, Latium vetus and other regions in middle Tyrrhenian Italy.[173]

By analysing settlement patterns in Rome and Latium vetus at three levels of analysis (the city, its territory and the region, Chapters 3–6) and by integrating these results with different dimensions of social evolution (social stratification, economy, craft specialisation, ritual and religion, ethnicity and identity, land use and vegetation history), the present work has shown that important developments leading to higher complexity were already under way well before the first contacts with Greek colonists in southern Italy during the late eighth century BC. In particular, excavations and re-evaluation studies have revealed a number of features of Rome between the middle of the eighth and middle of the seventh century BC, such as an earthen wall around the Palatine Hill, a forum for civic assemblies, cult places and a special aristocratic residence, equipped for official meetings and/or ritual meals, which materialized slightly earlier or at least at the same time as the first Greek colonies in southern Italy.

In addition, in line with a long tradition of studies of the Roman school of pre- and proto-history,[174] settlement analyses presented in the present work (in relation to both environmental variables and the hierarchical distribution of sites) showed that those incipient signs of urbanisation observed in Rome by the mid-eighth century BC represent only the final stage of a long 'local' process of settlement nucleation/centralisation and social differentiation, which began in middle Tyrrhenian Italy at least by the end of the Bronze Age and the beginning of the Early Iron Age, if not earlier. Therefore, this work suggests that urbanisation and state formation in middle Tyrrhenian Italy is primarily a local and autochthonous process, certainly related to but not determined by external stimuli. As already anticipated by some scholars, Etruscan and Latin pathways toward urbanisation and state formation have to be seen in parallel with similar developments occurring in Greece at the same time, rather than as a secondary, dependent phenomenon.[175]

Furthermore, recent studies conducted in southern Italy have suggested that in some cases western Greek colonial communities experimented with and created the urban model even before it was adopted in mainland Greece.[176] As a consequence, it has been argued that the development of the idea of the *polis* in Greece was in reality accelerated by contacts with the 'open' and 'modern world' of western colonies.[177] With reference to the origin of the Greek city, Robin Osborne has remarked that 'what made town life attractive … was town life elsewhere'.[178]

While this debate on whether the urbanisation process originated in the east or west seems unlikely to be resolved, new research perspectives emphasise continuous contact and exchange between the eastern and western Mediterranean regions during the Bronze and Early Iron Ages, even after the collapse of Mycenaean society.[179] Early contacts between Latin and Etruscan communities and Greek and Near Eastern people, attested by imported products and later by the introduction of Greek customs, such as the *symposium*,[180] cannot be denied. One of the clearest examples is the well-known Greek inscription found on a local *impasto* jug related to a female cremation burial (tomb 482) of the Latin necropolis of Osteria dell'Osa (Gabii).[181]

This tomb has been dated by Anna Maria Bietti Sestieri to Latial Sub-Phase IIB2, between ca. 800 and 770 BC,[182] according to traditional chronology,[183] or between ca. 875/850 and ca. 825 BC, according to the new absolute chronologies, which take into account dendro-chronology and carbon-14 dating and have been adopted in the present work.[184] However, Marco Bettelli suggests an even earlier date and attributes Osteria dell'Osa tomb 482 to Latial Sub-Phase IIB1,[185] which would be between ca. 830 and 800 BC in the traditional chronology or between 900 and ca. 875/850 BC according to the new chronology.

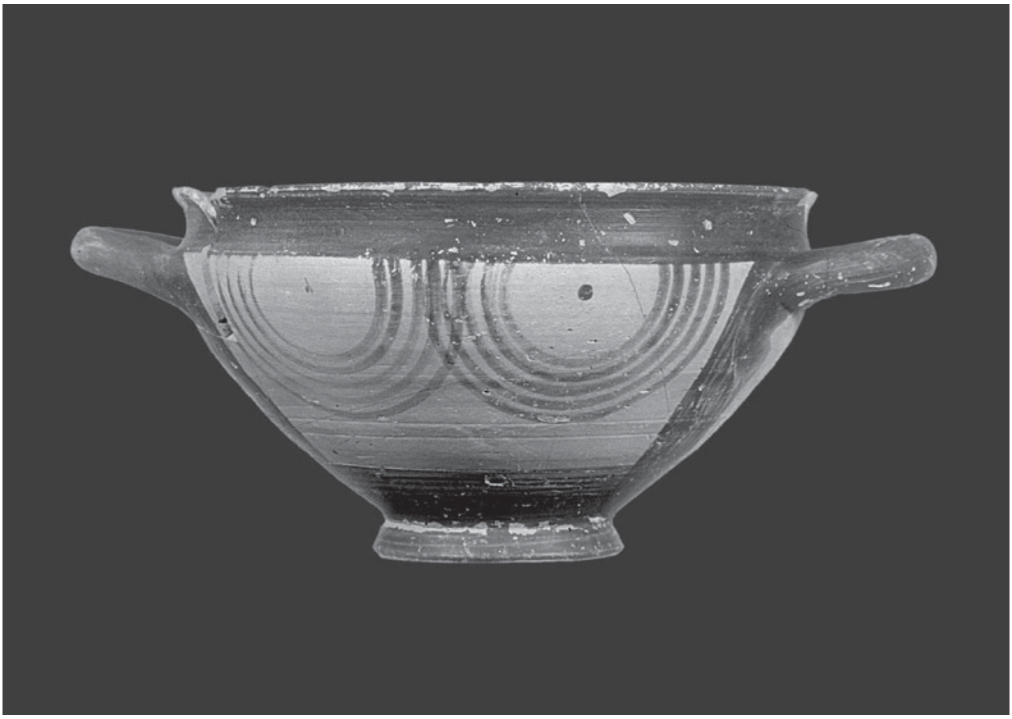
A fragment of a cup with concentric semi-circles found at Veii in the area of the necropolis of Quattro Fontanili has a date (i.e., the end of the ninth century BC) similar to that of the inscription of Osteria dell'Osa;[186] in the same cemetery a few later examples have also been found. As shown by Gilda Bartoloni, contacts seem to increase with the appearance of the first colonies in the West, while somewhat later local imitations and painted local pottery start to be produced.[187]

By contrast, a study by Alessandro Naso on Etruscan offerings found in Greek sanctuaries in the eastern Mediterranean has demonstrated that there was a reciprocity in the contacts and that the movement of goods and ideas was not merely from the East to the West but was also active in the opposite direction.[188] In addition, as already mentioned, it has been suggested that the orientalising phenomenon has to be seen as an expression of common ideology rather than a passive imitation of the East by the West.[189] According to this perspective, the presence from the eighth and during the entire seventh century BC of imported materials and works (*exotica*) or imitated objects from Greece and the Near East in burials (Fig. 132), and more rarely in sanctuaries or settlements of Etruria and Latium vetus (Fig. 133), should be interpreted as an indicator of common customs and rituals among Mediterranean elites during the eighth and seventh centuries BC rather than as signs of passive adoption.[190]

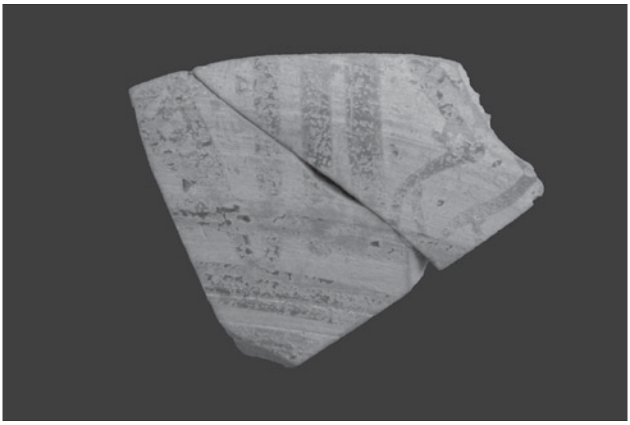
Considering the intensity and the reciprocity of these contacts between the eastern and western Mediterranean during the Bronze and the Iron Age,[191] and in line with more traditional and more recent Anglo-Saxon theoretical approaches, such as peer polity interaction,[192] Mediterraneanisation,[193] hybridisation,[194] connectivity[195] and networks,[196] the present work challenges both the traditional orientalist and the opposing occidentalist perspectives on Mediterranean urbanisation during the first millennium BC.

As suggested by Barry Cunliffe, from the Bronze Age, if not earlier, different areas of the Mediterranean basin were joined in a network with very high connectivity.[197] People, goods, ideas and lifestyles circulated freely in many different directions, not only from the eastern to the western Mediterranean[198] and vice versa,[199] but also to and from the Atlantic and central Europe.[200] For example, Serena Sabatini has recognised a similarity of conception, use and belief system related to cinerary urns in the shape of a hut, which were adopted both in Late Bronze Age to Early Iron Age central Italy and Late Bronze Age northern Europe (Scandinavia, north-eastern Germany and northern Poland). The distinctive differences in style and technical execution seem to suggest possibly a common conceptualisation rather than a simple imitation or derivation.[201]

Although local variations in chronology have to be taken into account, several studies conducted in different areas of the western Mediterranean (southern Spain,[202] Sardinia,[203] southern Italy, among both indigenous[204] and colonial communities[205]) have shown that local processes of urbanisation, which would have been completed between the eighth and sixth centuries BC, were already well under way by the beginning of the millennium, if not earlier, in parallel with similar processes in the eastern Mediterranean (e.g., Israel,[206] Cyprus[207] and continental Greece[208]). While the process differed from region to region and did not always occur at the same pace, these studies seem to suggest a certain degree of connectivity and reciprocal catalysing interactions among centres within the Iron Age pan-Mediterranean 'network', where the advance and progress of each node was favoured by reciprocal commercial, cultural and social contacts with other nodes.[209] Therefore, the peer polity perspective, fruitfully applied by Colin Renfrew to Etruria in middle Tyrrhenian Italy[210]



132. Caere (Cerveteri), Laghetto cemetery, tomb 2138: *skyphos*, probable Euboic production, Middle Geometric 2–Late Geometric 1, 8th century BC. (Rome, Museo Nazionale di Villa Giulia; from Bartoloni 2005, p. 352, cat. III.16.)



133. Rome, S. Omobono sanctuary: fragment from a *skyphos*, Euboic production, Late Geometric 1, second half of the 8th century BC. (Rome, Antiquarium Comunale, inv. 1707, 4513; from Bartoloni 2005, p. 349 cat. III.6.)

to explain state development as a product of interactions (contacts, exchanges, emulation, etc.) among independent but interrelated political entities rather than as a consequence of purely endogenous or exogenous factors, could be extended to the whole Mediterranean in combination with the network model.[211] Such an approach could lead to a better understanding of the complex interrelated dynamics of Mediterranean urbanisation during the first millennium BC.

7.5. CONCLUSIONS

When a number of trajectories towards urbanisation and state formation in Bronze Age and Early Iron Age Latium vetus (settlement centralisation, funerary evidence, craft specialisation and production, economic activities, ritual and cult, ethnicity formation, cultivation and agricultural product processing) are analysed in the light of traditional evolutionary theories and more recent multi-trajectory approaches and then tested against the archaeological evidence available, it is possible to show that evolutionary and multi-trajectory approaches, generally considered antithetic and mutually exclusive, can actually be reconciled. While it is important to be aware of the inevitable and intrinsic generalisation and schematisation of evolutionary theories, their heuristic value and potential to build useful historical and cultural frameworks cannot be denied.

Multi-trajectory models, however, are particularly useful for analysing differences among specific geographical and chronological contexts or for detecting and explaining anomalies and apparent inconsistencies. In other words, they help to explain how things actually worked within the wider and more general evolutionary picture. In particular, the concept of 'conjunction' of multi-linear dimensions of social evolution suggested by Gideon Shelach can be fruitfully applied to reconcile, on a theoretical level, evolutionary and multi-trajectory approaches and to better explain 'parallel' and 'contrasting trajectories' toward urbanisation, which are detected in the archaeological record of Bronze and Early Iron Age Latium vetus and central Italy.

A series of parallel trends towards higher complexity (observed in the settlement pattern, social organisation, economic and productive activities, etc.), which are embryonic during the earliest phases of the Bronze Age, seem to accelerate between the end of this period and the beginning of the Early Iron Age (end of the eleventh, the tenth and the beginning of the ninth century BC). At this time, they consolidate, converge and accelerate towards the crucial point of the mid-eighth century BC where they culminate in the emergence of urban organisation.

The first conjunction identified (Final Bronze Age to the beginning of the Early Iron Age) is marked by a macroscopic change: a completely new organisation of settlements, with the formation of large proto-urban centres, which implies not only a dramatic physical change in the size and scale of the communities, but also a radical innovation in their social organisation, both of which are very well explained by Bintliff's socio-ecological model, which combines German landscape ideas with territorial behaviour approaches and socio-demographic theories (face-to-face social interactions). The second conjunction, which appears by the mid-eighth century BC, is physically less evident because settlements remain more or less the same size, but the emergence of elites and their competition for power and authority is attested by warrior graves and rich female burials, whose contrast with ordinary burials increases exponentially as times goes by and explodes in the so-called phenomenon of the princely burials of the Orientalizing Age. As recent excavations have demonstrated for Rome, one member of the elite group eventually prevails over the others and manages to establish a centralised power and to reconcile social and class tensions under a newly founded order: the city-state.

From the discussion presented in this chapter, it is evident that the initial social organisation (pre-urban society), preceding the first conjunction between the end of the Bronze Age and the beginning of the Early Iron Age, and the final organisation (urban society), soon after the second conjunction at the end of the Early Iron Age and the beginning of the Orientalizing Age, are completely different realities and that a major change has occurred in between (proto-urban society). As shown in Table 25, during the proto-urban phase, roughly corresponding to the Early Iron Age, a progression towards higher complexity is seen in various dimensions of social evolution. However, as shown by analyses conducted in the present work, settlement patterns seem to attest to particularly dramatic and intense changes, with the formation of large nucleated centres that are ten times bigger and more populated than the settlements in the previous Bronze Age and have a much more integrated and hierarchical settlement organisation corresponding to land-use and market efficiency.

All of these changes are clearly well under way from an early stage of the Early Iron Age (first half of the ninth century BC or even slightly earlier, in any case well before the eighth century BC) and therefore pre-date any contact with Greek and Phoenician colonies in southern Italy. Thus, in contrast to the traditional diffusionist perspective, this work demonstrates that urbanisation and state formation were certainly linked to, but not induced by, external influences from the eastern Mediterranean. However, recent studies and perspectives on Mediterranean connectivity during the Bronze and Early Iron Ages, seem to suggest that the occidentalist approach should be rejected in favour of a more balanced perspective which emphasises 'reciprocal catalysing interactions', such as the traditional perspective of peer polity interactions (updated to a global level) combined with the novel paradigm of the network model.

CONCLUSIONS

Mitchell S. Rothman began his paper on the development of complex society in Mesopotamia in the late fifth and fourth millennia BC with the following statement: 'The study of the origin and nature of societal complexity is itself complex because the foci of study have shifted, and scholars have reflected differing intellectual orientations in interpreting similar aspects of the empirical record'.[1] The validity of Rothman's statement is fully apparent in the study of state and urban formation in middle Tyrrhenian Italy. State and urban formation and the rise of complex society are themselves complex phenomena, with many interlocking variables, and often different and even opposing theoretical models may equally apply to the same archaeological evidence.

For example, as shown in Chapter 7, both traditional evolutionary approaches and more recent holistic or multi-trajectory perspectives on state formation equally fit the archaeological evidence available for Bronze Age and Early Iron Age Latium vetus. This seeming paradox can be explained by the fact that reality, and social processes in particular, has multiple aspects and is determined and influenced by a variety of factors. As a result it is more likely that different theories may be consistent with (and shed new light on) different aspects of the same problem rather than a single global theory giving satisfactory explanations for all aspects of a very complex phenomenon.

Therefore, it appears to be possible to reconcile traditional evolutionary perspectives and new holistic approaches, which were once taken as mutually exclusive. Analysis of the archaeological evidence often demonstrates that social changes generally occur in a number of socio-political dimensions, which can often run parallel but not always at the same pace and can interact with one another in unpredictable ways; this is the case, for example, with 'multi-trajectories theories'[2] and 'complex adaptive system' theories.[3] However, it is also true that dramatic social changes often occur at the intersection of these socio-political dimensions ('multi-linear conjunctions'[4] or 'times of transition'[5]), which are not completely contingent or unlimited in number. Consequently, general evolutionary trends towards greater complexity can be detected in the history of human development and comparative research is still possible.

For instance, my earlier work on the orientalizing tombs of Rome and Latium vetus reassessed the evidence for social complexity at the time of state formation in ancient Rome, with a specific funerary approach. Combining both detailed analyses of the material culture and theoretical approaches (Anglo-American, French and Italian perspectives), that study demonstrated incipient social stratification in the Latin region by at least the end of the Final Bronze Age.[6]

Nevertheless, given the ideological and ritual nature of funerary data, which could conceal the real social organisation, the necessity of integrating funerary analysis with other types of evidence, such as settlement data, was clear. Therefore, building on the previous funerary approach and in combination with settlement analyses, the present work has provided a complementary perspective on the social and political landscape of Early Iron Age Latium vetus. Exploring the complex problem of state formation and urbanisation in middle Tyrrhenian Italy entailed an analysis of settlement patterns at three different levels: the city (Chapter 3), the territory (Chapters 4 and 5) and the region (Chapter 6).

The origin and the development of very early Rome was re-assessed in the light of new excavations conducted in the historical and archaeological centre of the city in the past thirty years (Chapter 3). Results from recent excavations and re-evaluation studies of material and stratigraphies from old excavations suggest that it is possible to date the beginning of the city of Rome as a 'political community' or a 'unity of citizens' to the middle of the eighth century BC.

The monumentalisation of the city was mostly completed during the seventh to the sixth century BC (or second Regal Period, corresponding to the time of the Tarquins), when Rome was embellished by monumental temples, stone-foundation houses, an urban fortification circuit (the so-called Servian Wall), a central drainage system (the Cloaca Maxima) and so on. However, as early as the eighth to the seventh century BC, and well before the urban achievements just listed, it is possible to identify a series of monuments which indicate the existence of a centralised power.

The earthen wall around the Palatine Hill and the institution of a series of communal spaces, all dated between the mid-eighth and mid-seventh centuries BC, such as a place for assemblies (Forum), an exceptional aristocratic residence (recently excavated in the area of the Vesta Sanctuary), with a large rectangular room equipped with benches along the walls possibly for official meetings and/or ceremonial events/meals, and a number of cult places (Capitoline Hill votive deposit, Vesta Sanctuary, the Lapis Niger and possibly the Volcanal in the Comitium) are all elements which signify the existence of a unified body of citizens and symbolically represent the unity of this community. They seem to confirm the 'foundation of the city', if not as a completed monumental, 'urban' entity, then at least as a self-conscious civic (and therefore 'urban') community

However, this milestone of the mid-eighth century BC and these monuments, which possibly indicate that the Roman community possessed a political consciousness (and was perhaps the first city-state in the western Mediterranean), represent only the final step of a long process whose roots date back to the Middle Bronze Age. At that time the first permanent settlement is archaeologically evident on the Capitoline Hill. Specifically, excavations conducted on the Capitoline Hill in the Giardino Romano area have revealed impressive earthworks, which were undertaken to regularise the slope of the hill and enlarge the inhabited area. According to Alberto Cazzella, this testifies to the importance of this settlement and its community during the Recent Bronze Age.[7]

In fact, it is possible, according to the excavators, that this considerable earthwork indicated a particular interest in this site and its location near the ford of the Tiber. In addition, the mobilisation and coordination of labour required for such a massive effort could imply the existence of a ruling class that was able to organize and impose its will on a great portion of the community. They therefore suggest that an advanced stage of social organisation of the Roman community was already being established during the Bronze Age.[8]

In addition and more importantly, the mid-eighth-century threshold, which may have marked the political 'foundation' of the city, represents more a qualitative step forward than a dramatic growth of the settlement of Rome. The most dramatic expansion of the settlement and increase in the population of the community are archaeologically attested by the abandonment of the central funerary areas (Fora and Temple of Antoninus and Faustina) and the beginning of the use of the Esquiline and Quirinal Hills cemeteries, already during the advanced Early Iron Age 1, or Latial Phase IIB, around the first half of the ninth century BC (or possibly slightly earlier, Latial Phase IIA, in the second half of the tenth century or the late tenth century BC). Most scholars agree that this sudden and exceptional growth of the settlement of Rome indicates a very important stage in its evolution, which possibly points to the formation of a large proto-urban centre and a fundamental acceleration towards urbanisation. At this stage, Rome had already reached the remarkable size of about

200 ha and a population of a few thousand, about 100–150 years before the first Greek colonies were founded in southern Italy.

The size and population of Rome did not change much during the eighth to the seventh century BC, when, as previously mentioned, a number of buildings and communal spaces of great symbolic value (earthen wall, cult places, a space for civic assemblies and a possible regal residence) seem to indicate the beginning of a 'city' – if not a monumental urban entity, then at least a community of people. Only with the new 'foundation of the city', the enlargement of the *pomerium* and the building of stone walls, attributed by literary sources to Servius Tullius (ca. 578–534 BC) during the second Regal Period (end of the seventh and the sixth century BC), would the city again radically change its physical appearance. With an extent of between 300 and 400 ha and a population of between 30,000 and 40,000 inhabitants, and most political and religious places built or restored in stone, it must have also finally achieved the appearance of a proper 'city' that could compete 'internationally' in the Mediterranean arena.

At the territorial level, the emergence of the city-state boundaries of Rome, defined by settlements and ritual between the Bronze and Early Iron Ages, was investigated in Chapter 4. The old literary approach to the definition and dating of the *ager Romanus antiquus* (the most ancient territory of Rome) was compared with a number of new theoretical approaches based on GIS applications (Thiessen polygons, catchment area and viewsheds). The new analyses confirmed the hypothesis suggested by Colonna[9] and Carandini[10] that the *ager Romanus antiquus* could have constituted the geographical basin from which the demographic seed of Rome was born (Section 4.3).

According to the model proposed by Bintliff, which requires that both the urban and the rural populations be included in the calculation,[11] the *ager Romanus antiquus*, whose limits were identified by a line of sanctuaries located at the fifth–sixth mile from the centre of the settlement (a radius of about 7.4–8.8 km, or 1.5–2 hours' travel), would have been capable of sustaining the population of Rome only until the Final Bronze Age. During the Early Iron Age the radical demographic growth of Rome (even if the minimal extent proposed by Cazzella of about 80–100 ha is considered) would have required a much larger territory with a radius of at least 10–15 km (Section 4.3).

The political and economic history of the rural hinterland of Rome was then defined using a diachronic analysis of the settlement patterns from the Bronze Age to the end of the Republican Period in a sample area located to the north-east of the modern city, at about 15 km from the centre within the modern 4th Municipal District. This area was chosen for the study because it was far enough from the town centre not to be affected by modern intensive urbanisation but close enough to be part of the territory of ancient Rome, at least from the Archaic Age, when the city extended its dominance over its neighbours (cf. Sections 4.3 and 4.4).

During the Bronze and Early Iron Ages, the sample area was part of the territories of Crustumerium, Fidenae, Ficulea and, from the end of the Early Iron Age onwards, Casale Capobianco, and therefore provided an ideal opportunity to study the territorial dynamics among these middle-sized proto-urban centres and between them and their hinterlands. Not only is the sample area of historical interest as a territory in which those centres, then Rome itself, were located; it has also been intensively surveyed in recent years (by the Suburbium Project, conducted by the University of Rome 'La Sapienza' in collaboration with the Soprintendenza of Rome), and data particularly suitable for locational and distribution analyses (see 'Data Sample and Settlement Typology' in Section 5.2) have been obtained.

The analysis in the present study of site locations in relation to physical variables at the territorial level showed a general and constant high correlation with good agricultural soils (alluvial and colluvial soils, sand and tuff soils) during all periods examined, from the Bronze Age to the Republican Period. In addition, an increasing association of sites with higher and steeper locations from the Orientalizing Age onwards possibly indicated an intensification of agricultural production which led to the occupation of less accessible areas (Section 5.3).

When the distribution of rock types associated with the sites (catchment area) was related to the general distribution of rock types within the region, an interesting connection between Bronze Age sites and clay deposits emerged. This strong association of sites with clay soils during the Bronze Age, which declines in later phases, might be connected with changes in modes of pottery production, from small-scale part-time household activity (where availability and easy access to raw materials might be crucial), during the Bronze Age, to the operation of large-scale specialised workshops (when the location in urban redistributory centres becomes more relevant), by the Archaic Age (Section 5.3).

Finally, the distance of sites from rivers associated in modern times with alluvial soils (which are likely to have had a consistent water flow in antiquity as well) decreases during the Orientalizing Age. This might suggest that by that time other avenues of transport, such as road networks, might have acquired greater importance.[12] As already noted, this is also the time when organised drainage and water supply tunnels cut in the tuff rock (*cuniculi*) start to appear in middle Tyrrhenian Italy[13] (Section 5.3).

The analysis of spatial patterns (rank-size rule and the hierarchical distribution of settlements) at the territorial level (Section 5.4) showed that, at least within the sample area, it is possible to detect an incipient two-level hierarchy during the Bronze Age. For instance, the rank-size index (which measures the degree of convexity of the rank-size curve and therefore represents numerically the level of settlement integration of a certain territorial system) shows values for the Bronze Age of around 0, indicating a log-normal rank-size curve, which suggests a discrete level of settlement integration. Later, with the Early Iron and Orientalizing Ages, the rank-size index values drop below 0, which corresponds to primate or concave curves, generally taken as an indication of the presence of a larger dominant centre, typical of colonial or imperial systems (Fig. 82).

This trend might be explained by the lack of middle-sized minor centres (between 4 and 20–25 ha), corresponding to the hierarchical level between first-ranked proto-urban centres (larger than 20–25 ha) or Orientalizing and Archaic cities and small villages at the lower end of the settlement hierarchy (less than 4 ha). During the Archaic Age and Republican Periods, the rank-size index again increases, with values above 0, which indicates a log-normal rank-size curve tending towards convex curves. This trend seems to be consistent with the process of de-urbanisation and ruralisation of centres around Rome, such as Crustumerium, which were conquered by the city and incorporated into its territory.

At the same time, the Archaic Age and Republican Period, it is possible to observe, especially from the Early Republican Period onwards, a constant increase in the number of new sites, which will become villas in the Late Republican Period, and a parallel decrease in the number of new houses/farmsteads. This might indicate a general trend towards concentration of land property, which eventually led to the agrarian crisis of the second century BC. However, as previously discussed, it is very difficult to provide a definite interpretation, and alternative explanations are possible – for example, in terms of less radical and more gradual changes in land use and/or property or simply variations in Roman lifestyles and ways of consumption.

The analysis of the spatial location of settlements at different hierarchical levels showed that during the Bronze and Early Iron Ages, the major and minor settlements in the sample area (Crustumerium, Fidenae, Casale Capobianco and the slightly more distant Ficulea) maintained a territorial radius between 5–6 km, the ideal measure predicted by site catchment analysis for dry-farming societies, and 3–4 km, which according to Bintliff's model represents the first stage of fission from the original system (5–6 km) and would have been part of a normal, organic evolution of the system, with little stress on the communities involved.[14] Only at a later stage, the Orientalizing and Archaic Ages, are a number of new villages founded between older settlements, which leads to a system with a territorial radius of 1.5–1.75 km.

This, according to Bintliff's model, represents the final development of a natural and organic settlement evolution – a critical point after which a lack of resources and/or overpopulation stress might occur.[15] However, at this chronological stage it is likely that minor centres, such as Casale Capobianco, and other small villages are dependent on primary centres (large Early Iron Age proto-urban centres, which will become Archaic cities, such as Rome, Crustumerium, Ficulea and Fidenae). This brings the system back to the original and sustainable radius of 5–6 km.

The physicality of the landscape and the degree of political integration between polities were then investigated at the regional level. This involved the analysis of settlement patterns in relation to environmental variables (Section 6.2) and locational analyses entailing, for example, the rank-size rule (Section 6.3), the spatial efficiency model and central place theory, as well as the analysis of settlement distribution in relation to hierarchical levels (Section 6.4) and the use of multiplicatively weighted Voronoi diagrams (Section 6.5).

The analysis of site location in relation to environmental variables, such as geology and distance from modern rivers gave results that were similar to those of the analyses performed at the territorial level. The analysis of site location in relation to slope and elevation was also conducted at the regional level. The latter confirmed the theory that open and lower-slope locations, generally associated with temporary or seasonal occupation during the Early Bronze Age, are progressively abandoned from the Middle Bronze Age onwards in favour of higher-slope and ridge positions on the tops of small hills and steep tuff plateaux, which became the sites of stable, naturally defensive, settlements.[16]

The application of locational analyses at the regional level (rank-size rule, spatial efficiency model, central place theory and multiplicatively weighted Voronoi diagrams) revealed in settlement patterns a long-term process consistent with development from a 'chiefdom'-level society (Bronze Age) to an urban and state-level society (Orientalizing and Archaic Ages), passing through an intermediate, proto-urban phase (Early Iron Age). In fact, indices of the degree of settlement integration and hierarchical organisation (such as the rank-size index and the A-shape coefficient, Figs. 103 and 104) show a continuously increasing trend from the Middle Bronze Age onwards, with a particular increase at the very beginning of the Early Iron Age (end of the tenth and first half of the ninth century BC). This time, which corresponds to the formation of large proto-urban centres on the plateaux later occupied by Archaic cities, is clearly earlier than the foundation of the first colonies in Magna Grecia (middle to late eighth century BC).

The analysis of settlement distribution based on distance between sites (according to the economic principle of 'least effort') showed that the spatial efficiency model elaborated by Steponaitis for chiefdom societies[17] seems to be applicable to Bronze Age Latin settlements. Within Latium vetus, in fact, primary centres (larger than 6 ha) seem to be efficiently located in relation to secondary sites within their territorial districts. This indicates that communication was favoured between lower- and higher-order settlements, rather than between settlements of equal rank.

This result is reasonably consistent with the results of central place theory, which showed for the Bronze Age *K*-values around 4 and 7, assuming a three-level hierarchy (Fig. 110), and for the Early Iron Age *K*-values around 2–3, assuming a four-level hierarchy (Fig. 111). In fact, *K*-values around 7 are generally associated with the 'administrative principle', which maximises communications and interactions (but also control) between central places and their dependent minor centres, as would be expected in the chiefly system assumed for Bronze Age Latium vetus (see also the high values of the spatial efficiency index for this age).

More difficult to explain for the Bronze Age are *K*-values around 4, which are generally associated with the 'transport principle', according to which central places are preferably located along inter-regional routes such as railways in modern industrial society or main roads in Roman times. However, the principle seems to be equally applicable to river routes in Bronze Age Latium vetus. Finally, *K*-values around 2–3, corresponding to the 'provision principle' and possibly indicating evolution towards a system based on market economy, are consistent for Latium vetus during the Early Iron Age and later phases, when an early state and then city-state socio-political organisation are assumed.

In addition, it should be noted that this possible incipient market organisation (generally considered highly hypothetical before the Archaic Age but cautiously suggested in recent works for even earlier periods) is subsequent to a pre-existing territorial organisation, which is clearly defined by land-use efficiency. As predicted by the dynamic territorial model elaborated by Bintliff,[18] an original Latin Bronze Age village settlement system with a territorial radius of about 5–7 km is divided during the late Early Iron Age 1 into a system with a 3.5- to 4-km radius (considered by Bintliff as a mature and stable territorial system), with second-order settlements interspersed at regular intervals.

Finally, in the Orientalizing and Archaic Ages, as suggested by the evidence at the territorial level, the settlement pattern seems to be further disrupted, and reduced to a system with territorial quanta of 1.5–1.75 km, by the foundation of villages in between the cities, which indicates demographic pressure and/or a lack of resources. As suggested by Bintliff, the combination of this dynamic territorial model with socio-demographic theories provides a useful framework for explaining Mediterranean urbanism during the first millennium BC. As in the case of Latium vetus, the original settlement system of small face-to-face exogamic Bronze Age village communities (below the threshold of 400–500 individuals and with a territorial radius of 5–6 km) tends to be split up in order to maintain equilibrium; however, during this process, a few settlements might decide to change strategies, grow larger and start practising endogamy in order to keep land and other valuable commodities within the group, which would otherwise be lost due to necessary inter-community marriages.

These growing Early Iron Age proto-urban centres eventually become dominant in the system. They incorporate smaller and weaker competing centres, and they guide and control the foundation of new, small, 'dependent' villages in their territories during the Early Iron Age 2 or Orientalizing and Archaic Ages. Therefore, the apparent instability of a territorial system divided into quanta of 2- to 3-km or even 1.5- to 1.75-km radius would be stabilised by the presence of emerging central places; these would control the smaller, dependent settlements within an average catchment area of 6–6.5 km, which is suitable for stable and sustainable territorial systems.

Thus the socio-ecological model of Mediterranean urbanisation developed by Bintliff not only suggests a plausible explanation for settlement and territorial patterns observed in Latium vetus during the Bronze and Early Iron Ages, but also provides a possible explanation for the much debated process of settlement centralisation and nucleation, which is attested archaeologically in Etruria, Latium vetus and other Italian regions such as Campania between the end of the Bronze Age and the beginning of the Early Iron Age.

Chapter 7 compared the funerary and settlement perspectives on urbanisation and state formation in Latium vetus with other approaches based on various types of evidence such as craft specialisation, economy, cult and ritual, ethnicity, land evaluation and vegetation history. The comparison showed that different trajectories towards urbanisation and state formation do not always occur at the same pace. For example, the trend towards greater hierarchy and integration observed in the settlement patterns from the Bronze Age onwards, with a particular increase starting from the late Early Iron Age 1 (or Latial Phase IIB, first half of the ninth century BC) (Figs. 99 and 100), is not exactly paralleled by a constant increase in the social complexity, as mirrored by the funerary evidence.

While in Latial Period I (second half of the eleventh and first half of the tenth century BC), male burials can be clearly associated with both political and religious power symbols, in Latial Period II (second half of the tenth and first half of the ninth century BC) high-status symbols are never associated with a single burial and seem to be spread among different individuals. It has been suggested that this pattern might be explained using the categories of corporate versus network modes or hierarchical versus heterarchical organisations. It is also possible that the apparent dichotomy between funerary and settlement evidence is due to specific ideological factors. In the recently formed large proto-urban centres, new ideologies of political equality may have been dominant, and ideas of a fairer and more balanced accumulation and distribution of wealth could have been displayed through funerary rituals even by elite members of the community.

Notwithstanding these ambiguities and the fact that social dimensions may not always be parallel or exist at the same time scale, a general trend towards higher complexity can be detected and specific conjunctions which point to radical social changes can be identified. With reference to Early Iron Age Latium vetus, it is undeniable that a particular conjunction of changes in several socio-political dimensions occurs in the course of the eighth century BC, and this time can be considered the threshold between proto-history and history and between proto-urban and urban organisation.

A mature stage in the process of social stratification is confirmed by the appearance at the end of the eighth century BC of lavish princely tombs. Similarly, the settlement pattern shows a mature stage of evolution confirmed by a high degree of settlement integration (compare the results of locational analyses at the territorial and regional levels) and by a more exact definition of urban boundaries. In fact, surveys conducted on the plateaux of a number of Latin proto-urban centres show that in the course of the eighth century BC, sites located at the foot and along the slopes of the plateaux are abandoned, while the settlement concentrates on the plateaux, which were later occupied by Archaic cities.[19]

With respect to craft production, according to some scholars, such as Albert J. Nijboer and J. Rasmus Brandt, specialisation and standardisation can be considered widespread only from the seventh century BC onwards, when household production is replaced by workshop production.[20] However, according to other scholars, such as Anna Maria Bietti Sestieri, Giovanni Colonna, Paolo Carafa and Cristiano Iaia, signs of specialisation can be detected during the preceding century. For example, Bietti Sestieri observed signs during the eighth century BC of standardisation of pottery production, such as a reduction in the number of shapes and decorations in *impasto* pottery;[21] Colonna and Carafa have suggested, on the basis of evidence for the production of new types of pottery, such as red *impasto* and purified clay vessels, that updraft kilns and fast potter's wheels were introduced.[22] Finally, Iaia noted evidence of an increase in the standardisation of bronze sheet production and a change in the distribution of some of these products from mere gift exchange circulation to a market exchange economy.[23]

As for other economic trajectories or dimensions, there are some hints that poly-culture production (wine, olives and cereals) began by the middle of the eighth century BC, but the evidence is not conclusive. Land evaluation research, conducted in the Pontine Plain by Ester van Joolen, demonstrated a slight improvement in the suitability of land for poly-culture (olives with cereals) from the Bronze Age to the Early Iron Age. Unfortunately, pollen diagrams did not show any sign of these kinds of land use in this area.[24] However, taking into consideration the whole of central Italy, there are archaeological indicators of an early introduction of poly-culture. Grape pips and olive stones, for example, have been found in several ninth- and eighth-century settlement contexts (Gran Carro, near Bolsena lake, and Cures Sabini, near Rieti),[25] and vases containing liquids and drinking pots are common in funerary contexts of the ninth and eighth centuries BC. In addition, a small image of a plough on a bronze incense burner from the necropolis of Olmo Bello in Bisenzio, dated to the eighth century BC, might be an indication of the existence of iron ploughs at this time,[26] but the evidence is too scarce to be definitive.

The importance of cult places as symbols of the civic and political unity of the new urban communities has been suggested by Alessandro Guidi. This author has repeatedly emphasised that several Archaic Age urban Latin temples are superimposed on cult huts or votive deposits of older chronological phases, dating back at least to the eighth century BC and sometime earlier.[27] This view is supported by Richard Bradley's observation that in Iron Age Britain, while cult places and monuments in pre-historic times are generally linked to wild or natural places, from the Iron Age something changes.[28] From this time onwards, ritual places, such as temples and sanctuaries, are located mainly in settlements. One possible reason for this relocation of cult places is that the ritual activity could then be more easily controlled by authorities.[29] This is certainly plausible, but there is also the intriguing possibility that these monuments represented the political unity of new urban settlements, where power, which was previously shared and contested, is finally unified under the control of a single *rex*, who holds both religious and political power.

As mentioned earlier, this process is particularly evident in Rome, where during the eighth century and the beginning of the seventh century BC the appearance of a series of monuments, such as the fortification wall around the Palatine, a regal residency, cult places and a space for assemblies, points to the existence of a centralised power governing a unified body of citizens. This having been said, while the eighth century BC represented a crucial conjunction of social, economic and political trajectories towards urbanisation, this does not mean that everything happened suddenly at this time as a result of external Greek and Near Eastern influences. As the present work demonstrated, at the city, territorial and regional levels, long-term processes leading to higher complexity, rooted at least as far back as the Bronze Age, were well under way by the beginning of the Early Iron Age, before the first contacts between middle Tyrrhenian populations and Greek colonists. For instance, as illustrated in Chapter 3 and discussed earlier in this chapter, the most significant growth of Rome is attested by the abandonment of the central funerary areas in favour of the more distant Esquiline and Quirinal Hill cemeteries, dated to an advanced stage of the Early Iron Age 1 (Latial Phase IIB, first half of the ninth century BC).

Similarly, settlement locational analyses conducted at the territorial and regional levels demonstrated that Latium vetus evolved from a Bronze Age, highly unstable territorial system (as shown by multiplicatively weighted Voronoi diagrams) of dispersed villages, possibly corresponding to a chiefly organisation (highlighted by the spatial efficiency index), to a much more stable, organised and hierarchical Early Iron Age settlement structure (shown by MWVD and the rank-size rule). The spatial distribution of large Early Iron Age primary centres, with their dependent minor centres, villages and local settlements, seems to have been dictated by land-exploitation efficiency but also a possible incipient market organisation (as indicated by Bintliff's socio-ecological model and central place theory). At this point Latium vetus would have reached an early state or proto-urban level society. This is also suggested by the calculation of the rank-size index and the A-shape coefficient, which identify the level of settlement integration of the territorial system. These two indices show that Latium vetus demonstrated a remarkable trend towards higher complexity and settlement hierarchical organisation from a late phase of the Early Iron Age 1 (Latial Phase IIB, first half of the ninth century BC; Figs. 103 and 104).

All of this evidence seems to suggest that fundamental local and internal processes leading to higher complexity and urbanisation were occurring during the Early Iron Age (with significant precedents in the Bronze Age), well before the intensified contacts with Greeks and people from the Near East people during the late eighth and the early seventh century BC, which are shown by Greek pottery and exotic objects found in urban contexts (e.g., the S. Omobono area in Rome) and rich Latin burials.[30] Thus, in contrast with the traditional diffusionist model, which holds that the concept of the 'city' was imported from the East, along with goods, people and ideas, by Greeks and Phoenician merchants, this work has demonstrated that urbanisation and state formation in Latium vetus and middle Tyrrhenian Italy was certainly 'entangled' with,[31] but not triggered by, external influences from the eastern Mediterranean.

However, on the basis of a number of recent studies and perspectives on Mediterranean connectivity during the Bronze and Early Iron Ages, the present work suggests that the opposing approach, which claims that the city-state model was first developed in the West, namely with the early urbanisation of Rome, must also be rejected. While comparisons are difficult because of the lack of precise correlation among local material typologies and chronologies, Mediterranean urbanism during the first millennium BC appears to be parallel and almost synchronous in a number of regions, such as Italy, Spain, Greece, Israel and Cyprus, which were connected by the exchange of goods, people and ideas even after the collapse of the Mycenaean palaces. Therefore, new and more dynamic perspectives are required. As an example, the traditional approach of peer polity interaction (applied locally to Etruria by Renfrew), restructured for use on a global level and combined with the novel model of the network (both as a metaphor and as a flexible and scalable tool of analysis), might provide a useful framework and methodology for investigating and better understanding the vibrant dynamics and reciprocal catalysing interactions that sparked Mediterranean city-state culture.

APPENDIX

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A1. RELATIVE AND ABSOLUTE CHRONOLOGY IN BRONZE AND EARLY IRON AGE LATIUM VETUS

Since the end of the Second World War, many scholars have worked on the typology and chronology of the material culture of Early Iron Age Latium vetus, mainly by studying funerary contexts.[1] In the 1970s, Hermann Müller-Karpe defined a fundamental seriation of burial contexts from Rome and the Alban Hills.[2] This work, along with that of Renato Peroni, on the Roman necropolis of the Forum and the Esquiline[3] and that of Giovanni Colonna[4] on the entire Latin region, constituted the basis of all other studies. Among these should be mentioned the typology and chronology proposed by the authors of *The Formation of the City in Latium* (Rome 1977).[5] This work, later refined by Anna Maria Bietti Sestieri's excavation and publication of the cemetery of Osteria dell'Osa (Gabii)[6] and Marco Bettelli's study of the Roman cemeteries,[7] has been a benchmark for all scholars dealing with the material culture of Early Iron Age Latium vetus.

Within this long tradition of study, the absolute chronology was based mainly on the association of local pottery with a few imported Greek goods, whose date, in turn, was based on written sources. Sometimes a particular event (such as the foundation of a colony or the destruction of a city) mentioned in literary accounts can be identified archaeologically and thus provides an absolute and stable *terminus post quem* (date after which) or *terminus ante quem* (date before which), on which it is possible to anchor the relative chronology based on the analysis of material culture.[8]

Since the late 1980s, the traditional chronology has been called into question by new dating techniques, based on dendro-chronology and applied to central Europe and the Aegean,[9] or based on radiocarbon data (henceforth C14) and tested against evidence obtained during excavations in Latium vetus.[10] The new absolute dendro-chronologies from central Europe and the Aegean have been used by Renato Peroni, Marco Bettelli and Marco Pacciarelli to propose new, provisional absolute dates for the Bronze Age and the Early Iron Age in central Italy.[11] As can be seen in Table A1, the main difference between the chronology derived from dendro-chronology and the traditional chronology derived from literary sources is that the end of the Final Bronze Age is considered to be ca. 900 BC in the traditional chronology and 1020 BC in the dendro-chronology. This would imply a longer duration for the Early Iron Age, which in historical terms means a longer proto-urban phase in the process leading to urbanisation in middle Tyrrhenian Italy.[12]

A similar high absolute chronology for the beginning of the Early Iron Age was suggested by C14 dating, which was calculated using materials from excavations conducted in Latium vetus during the 1980s and 1990s (Fidenae, Satricum, Castiglione cemetery near Gabii).[13] In addition, this chronology, based on C14 dating, suggests an adjustment in the dating of the transition between Latial Periods II and III to ca. 850/825 BC and the beginning of the Orientalizing Age to 780 BC, that is, about 50–75 years earlier than the traditional chronology (respectively, 770 BC and 730/700 BC).

While the absolute chronology of Greek Geometric pottery would not be affected by the new chronology based on C14 dating, because none of the archaeological evidence analysed was actually associated with distinctive Greek material, there are a number of consequences for the historical interpretation of urbanisation in central Italy and East–West contacts during the Late Early Iron Age and the Orientalizing Age:

1. a longer period of pre-colonial contacts, from the ninth to the early eighth century BC;
2. less abrupt socio-economic transitions in Italy during the eighth century BC;
3. a lengthening of the proto-urban phase in the process of urbanisation in central Italy;
4. synchronous evolution of the Orientalizing Age in Greece and Italy; and
5. a revision of the 'historical' Greek colonisation process, in particular in relation to traditional foundation dates, referred by literary sources.[14]

In order to shed new light on these and other issues and to reconcile the various chronologies of the Late Bronze and Iron Age cultures of Italy with the more exact systems based on C14 data, a conference was organised in Rome in 2003 to promote dialogue and define at least some common ground.[15] Many scholars will still disagree on many points, but at least some aspects of the traditional system seem to be supported by many recent developments. In particular, no consensus was achieved on the beginning and the end of the Bronze Age, and thus on the starting point of the Early Iron Age, with the consequent uncertainty of the length of the proto-urban phase. By contrast, a general agreement seemed to be reached on the beginning of the Orientalizing Age, around 740/730 BC, which is only slightly earlier than the traditional chronology, 730/720 BC. Thus the synchronism with the traditional dates, so-called Thucydidean, for Greek colonisation would be re-established.[16]

Table A1 summarises all the main stages of the preceding discussion on traditional chronology and new dendro-chronological and C14 dates, with particular reference to central Italy. The last two columns summarise the most recent proposals based on C14 and dendro-chronological data, which were adopted in the present work. As seen in the table, Pacciarelli has attempted to correlate C14 data from northern and central Italy with dendro-chronological data from the north-western Alps.[17] Nijboern presents new C14 dating for various sites in the Mediterranean (Fidenae in Latium vetus, Cartago, Gordion, Pithecussa, and Francavilla Marittima in Calabria, southern Italy) and discusses them in relation to both the traditional Aegean chronology and the new central European chronologies, based on C14 and dendro-chronological data.[18] And finally, Van der Plicht and other authors present a larger and geographically more diffuse C14 data sample (Israel, Sinai in Egypt, Jordan, Spain, Tunisia and central Italy), which seems to support a 'high' chronology for the Iron Age in each respective area of the Mediterranean.[19]

As for central Italy, however, these more recent studies, in line with the general conclusions of the conference held in Rome in 2003:

Table A1. Relative and absolute chronology in central Italy compared with traditional Greek chronology

Traditional Greek Chronology[a]	Aegean/ Greece	Veio	Tarquinia	Latium	Traditional Chronology	Phase	Dendro- chronology[c]	C14 Chronology[d]	New Absolute Chronology 1[e]	New Absolute Chronology 2[f]
1550/1500	Late Helladic I-II-IIIA	Grotta Nuova	Grotta Nuova	Grotta Nuova / Proto-Apennine	1600	Middle Bronze Age 1–2	1700		1700	1700
		Apennine	Apennine	Apennine	1400	Middle Bronze Age 3	1500		1400	1400
	Late Helladic IIIB	Subapennine	Subapennine	Subapennine	1300	Recent Bronze Age	1365/1350	1350	1325/1300	1325/1300
	Late Helladic IIIC	Proto-villanovan	Proto-villanovan	Proto-villanovan	1150	Final Bronze Age 1	1200	1200	1175/1150	1200
1125	Sub-mycenean				1100	Final Bronze Age 2	1150			
1050	Proto- Geometric	Proto-villanovan	Proto-villanovan	I	1000	Final Bronze Age 3	1085		1050/1025	1050
900	Early Geometric	IA	IA	IIA	900	Early Iron Age 1 Early	1020	1020	950/925	950
	Middle Geometric I	IB- IC	IB	IIB	830	Early Iron Age 1 Late	950	ca. 900	ca. 900	ca. 900
	Middle Geometric II	IIA- IIB	II	IIIA	770	Early Iron Age 2 Early/Late	880	850/825	850/825	825/800
760	Late Geometric I	IIC	II	IIIB	750	Early Iron Age 2 Final	810			
700	Proto-Attic Proto-Corinthian	IIIA	IIIA	IVA1	730/720	Early Orientalizing Age	750	780	750	725
		IIIB	IIIB	IVA2	670/660	Middle Orientalizing Age				
600	Transitional Ripe Corinthian	IV	IV	IVB	640/630	Recent Orientalizing Age			630/620	630/620
525	Black Figure Early Red Figure Black Figure	AP	AP	AP	580	Archaic Age			580	580
		ERP	ERP	ERP	509	Early Republican Period				
		MRP	MRP	MRP	400	Middle Republican Period				
		LRP	LRP	LRP	200	Late Republican Period				
					31/27					

Note: All dates are BC.

[a] Morris 1987. [b] Colonna 1976; Ampolo et al. 1980. [c] Peroni 1994; Bettelli 1994. [d] Bietti Sestieri et al. 1999–2000. [e] Pacciarelli 2001, 2005; Nijboer 2005. [f] Van der Plicht et al. 2009.

1. seem to adjust the traditional chronology by about 50 years, rather than 70 or more, as suggested by the older studies based on dendro-chronological or C14 data;[20]
2. confirm the beginning of the Orientalizing Age at the traditional date of ca. 730 BC and therefore the synchronism with traditional dates for Greek colonies; and
3. lengthen the proto-urban phase by only 50 years.

A2. THE TERRITORIAL LEVEL: THE 4TH MUNICIPAL DISTRICT SAMPLE (ROME) – ANALYSES, CALCULATIONS AND STATISTICAL TESTS (CF. CHAPTER 5, MAIN TEXT)

A2.1. SETTLEMENT PATTERNS AND ENVIRONMENTAL VARIABLES: GEOLOGY, ELEVATION, SLOPE AND DISTANCE FROM MODERN RIVERS (SECTION 5.3, MAIN TEXT). As explained in greater detail in the main text, the location of sites was analysed at both the territorial and regional levels, in relation to a number of physical characteristics of the landscape: geology, elevation, slope and distance from modern rivers. In this section, the calculations used in the analyses and the statistical tests performed at the territorial level on sample data from the 4th Municipal District of modern Rome are presented. The distribution of sites was examined in relation to various classes within each category of analysis. Two calculations were performed. Firstly, the distribution of settlements among different classes was calculated as a fraction (expressed as a percentage) of the number of sites per each class in relation to the total number of sites (traditional density). Secondly, the density of settlements associated with each class was normalised taking into account the extent of land included in each class (normalised density).

The normalised density of sites was calculated for each class according to the following formula:

$$\frac{NS_i/TS}{A_i/TA_i},$$

where NS_i is the number of sites for each soil type i, TS is the total number of sites, A_i is the area of the soil type i and TA_i is the total area of the soil type i within the sample area. In this way biases related to the distribution of different variables across the whole area under study were avoided. For instance, if the majority of the land included in the area under study is tuff, a random distribution of sites would automatically highlight a larger number of them on this type of soil.

Subsequently, the association of sites with different classes was verified by the chi-square goodness-of-fit test.[21] This methodology entails comparing the observed distribution of sites against the expected distribution of sites assuming the null hypothesis of a random distribution. The expected distribution of sites for each class (expected mean value variance) is calculated by multiplying the total number of sites for the area of each class. Then the expected standard deviation is calculated by extracting the square root of these values. Finally the chi-square value is calculated according to the following formula:

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i},$$

where O_i is the observed frequency and E_i is the expected (theoretical) frequency asserted by the null hypothesis. Finally, the chi-square probability value can be calculated with a table easily available on the Web.[22] If the chi-square probability value is less than.05, the null hypothesis of a random distribution can be rejected with 95% probability. Finally, the observed frequencies were compared against the expected range of variation according to a supposed random distribution (see Figs. A1–A8).

A2.2. SITE DISTRIBUTION AND HIERARCHICAL LEVELS: TERRITORIAL SAMPLE (SECTION 5.4, MAIN TEXT).

In order to analyse settlement spatial location within a GIS environment, first a continuous surface measuring the linear distance from settlements was calculated (GRID) (cf. Figure 63 in the main text). Then this continuous surface was reclassified using buffer zones of 500 m each (cf. Figure 64). The GRID was then converted to a vector surface (polygon-shape file). At this point, the association between sites and each buffer zone could be more easily defined by the geoprocessing function 'Assign data by location'. In particular, the distribution of villages A (larger than 1 ha and smaller than 4 ha) in relation to distance from cities (more than 20–25 ha), of villages B (larger than 1,000 m^2 and smaller than1 ha) in relation to distance from villages A and of generic sites (farmsteads, tombs, etc.) in relation to distance from villages B was calculated.

In Figures A9–A20 mathematical calculations related to this methodology are presented. Firstly, land distribution according to distance from first-order centres (cities; Fig. A9) and from second- and third-order centres (respectively villages A and B; Figs. A10, A11 and A12) was calculated in order to detect any regularity in the spatial location of settlements. This analysis showed that most of the land lies between 1.5 and 3 km from cities and within 2 km from villages. Then the association of sites with different distance classes (density) was calculated according the following formula:

$$\frac{NSd}{Ad},$$

where NSd is the number of sites for each distance class and Ad is the area (in hectares) of each distance class. In addition, normalised densities were calculated according to the following formula:

$$\frac{NSd / TNS}{Ad / TA}.$$

Populations in Different Areas

	Area (ha)	Class	BA	IA	OA	AA	ERP	MRP	LRP
	6	A		1	1	1	1	1	1
	809	B	3		2	7	8	9	17
	4	D2							
	83	E			1	1	1	2	2
	355	S1	1		6	12	7	8	14
	1,495	S2	9	7	29	75	80	96	109
Total	2,753	0.00000	13	8	39	96	97	116	143

Normalised Populations and Areas

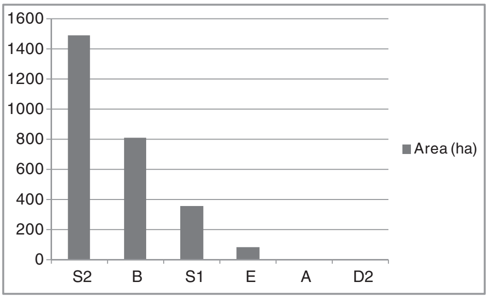
Area frac	Class	BA	IA	OA	AA	ERP	MRP	LRP
0.00	A	0%	13%	3%	1%	1%	1%	1%
0.29	B	23%	0%	5%	7%	8%	8%	12%
0.00	D2	0%	0%	0%	0%	0%	0%	0%
0.03	E	0%	0%	3%	1%	1%	2%	1%
0.13	S1	8%	0%	15%	13%	7%	7%	10%
0.54	S2	69%	88%	74%	78%	82%	83%	76%

Normalised Densities

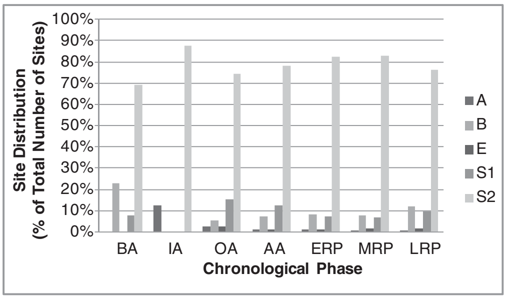
Class	BA	IA	OA	AA	ERP	MRP	LRP
A	0.00	55.11	11.30	4.59	4.54	3.80	3.08
B	0.78	0.00	0.17	0.25	0.28	0.26	0.40
D2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E	0.00	0.00	0.85	0.35	0.34	0.57	0.47
S1	0.60	0.00	1.19	0.97	0.56	0.53	0.76
S2	1.27	1.61	1.37	1.44	1.52	1.52	1.40

Land Distribution According to Geology Classes

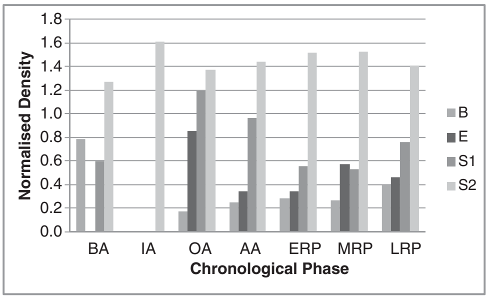
Class	Area (ha)
S2	1,495
B	809
S1	355
E	83
A	6
D2	4



Geology: Normalised Populations



Geology: Normalised Densities



A1. Association between sites and geology.

Population in Different Areas

Area (ha)	Class	BA	IA	OA	AA	ER	MR	LR
6	A		1	1	1	1	1	1
809	B	3		2	7	8	9	17
4	D2							
83	E			1	1	1	2	2
355	S1	1		6	12	7	8	14
1,495	S2	9	7	29	75	80	96	109
2,753		13	8	39	96	97	116	143

Normalised Areas and Populations

Area frac	Class	BA	IA	OA	AA	ER	MR	LR
0.00	A	0.00	0.13	0.03	0.01	0.01	0.01	0.01
0.29	B	0.23	0.00	0.05	0.07	0.08	0.08	0.12
0.00	D2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.03	E	0.00	0.00	0.03	0.01	0.01	0.02	0.01
0.13	S1	0.08	0.00	0.15	0.13	0.07	0.07	0.10
0.54	S2	0.69	0.88	0.74	0.78	0.82	0.83	0.76

Normalised Density

Class	BA	IA	OA	AA	ER	MR	LR
A	0.00	55.11	11.30	4.59	4.54	3.80	3.08
B	0.78	0.00	0.17	0.25	0.28	0.26	0.40
E	0.00	0.00	0.85	0.35	0.34	0.57	0.47
S1	0.60	0.00	1.19	0.97	0.56	0.53	0.76
S2	1.27	1.61	1.37	1.44	1.52	1.52	1.40

Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
A	0.03	0.02	0.09	0.22	0.22	0.26	0.32
B	3.82	2.35	11.47	28.23	28.52	34.11	42.05
D2	0.02	0.01	0.06	0.14	0.15	0.17	0.21
E	0.39	0.24	1.17	2.88	2.91	3.48	4.30
S1	1.68	1.03	5.03	12.39	12.52	14.97	18.46
S2	7.06	4.34	21.18	52.14	52.68	63.00	77.66

Expected Standard Deviations

Class	BA	IA	OA	AA	ER	MR	LR
A	0.17	0.13	0.30	0.47	0.47	0.51	0.57
B	1.96	1.53	3.39	5.31	5.34	5.84	6.48
D2	0.14	0.11	0.24	0.38	0.38	0.42	0.46
E	0.62	0.49	1.08	1.70	1.71	1.87	2.07
S1	1.30	1.02	2.24	3.52	3.54	3.87	4.30
S2	2.66	2.08	4.60	7.22	7.26	7.94	8.81

Chi-Square

Class	BA	IA	OA	AA	ER	MR	LR
A	0.03	53.12	9.39	2.81	2.76	2.06	1.41
B	0.18	2.35	7.82	15.96	14.76	18.48	14.92
D2	0.02	0.01	0.06	0.14	0.15	0.17	0.21
E	0.39	0.24	0.03	1.23	1.26	0.63	1.23
S1	0.27	1.03	0.19	0.01	2.43	3.25	1.08
S2	0.53	1.62	2.89	10.03	14.17	17.29	12.65
Chi-Square	**1.42**	**58.38**	**20.36**	**30.19**	**35.54**	**41.89**	**31.49**
Chi-Sq. No A	**1.39**	**5.26**	**10.97**	**27.38**	**32.77**	**39.82**	**30.08**
Chi-Sq. Prob.	**0.92210**	**<.0001**	**0.00110**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
Chi-Sq. Prob. No A	**0.84590**	**0.26160**	**0.02690**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**

Lower Error Range Values of Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
A	–0.31	–0.25	–0.51	–0.72	–0.72	–0.76	–0.81
B	–0.09	–0.72	4.69	17.60	17.84	22.43	29.08
D2	–0.26	–0.21	–0.42	–0.61	–0.62	–0.66	–0.71
E	–0.86	–0.74	–0.99	–0.51	–0.50	–0.25	0.15
S1	–0.91	–1.00	0.55	5.35	5.44	7.23	9.87
S2	1.75	0.18	11.98	37.70	38.16	47.12	60.04

Higher Error Range Values of Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
A	0.37	0.29	0.68	1.15	1.16	1.29	1.46
B	7.73	5.42	18.24	38.85	39.20	45.79	55.01
D2	0.30	0.23	0.54	0.90	0.91	1.01	1.14
E	1.64	1.22	3.34	6.28	6.33	7.22	8.44
S1	4.27	3.07	9.52	19.43	19.60	22.71	27.05
S2	12.37	8.51	30.38	66.58	67.20	78.87	95.29

A2. Association between sites and geology: chi-square test.

Populations in Different Areas

	Area (ha)	Class	BA	IA	OA	AA	ERP	MRP	LRP
	676	16–30 m		4	6	11	8	9	17
	422	30–47 m	3		6	15	13	19	22
	991	47–63 m	9	4	12	33	39	46	49
	453	63–82 m	1	1	13	28	26	30	38
	167	82–101 m			5	9	9	9	12
	44	101–32 m				1	3	4	6
Total	2,753		13	9	42	97	98	117	144

Normalised Populations and Areas

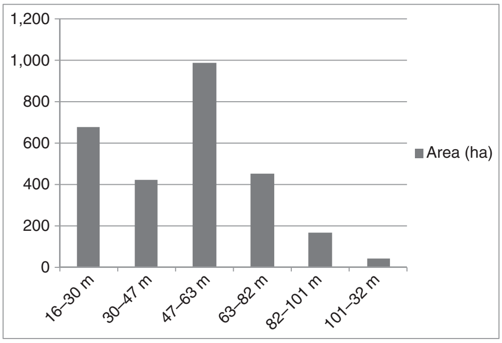
Area frac	Class	BA	IA	OA	AA	ERP	MRP	LRP
0.2457	16–30 m	0%	44%	14%	11%	8%	8%	12%
0.1531	30–47 m	23%	0%	14%	15%	13%	16%	15%
0.3600	47–63 m	69%	44%	29%	34%	40%	39%	34%
0.1646	63–82 m	8%	11%	31%	29%	27%	26%	26%
0.0607	82–101 m	0%	0%	12%	9%	9%	8%	8%
0.0158	101–32 m	0%	0%	0%	1%	3%	3%	4%

Normalised Densities

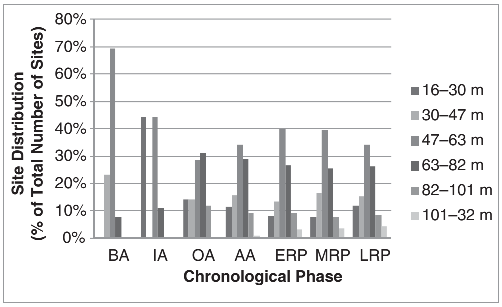
Class	BA	IA	OA	AA	ERP	MRP	LRP
16–30 m	0.00	1.81	0.58	0.46	0.33	0.31	0.48
30–47 m	1.51	0.00	0.93	1.01	0.87	1.06	1.00
47–63 m	1.92	1.23	0.79	0.95	1.11	1.09	0.95
63–82 m	0.47	0.67	1.88	1.75	1.61	1.56	1.60
82–101 m	0.00	0.00	1.96	1.53	1.51	1.27	1.37
101–32 m	0.00	0.00	0.00	0.65	1.93	2.16	2.63

Land Distribution according to Altitude Class

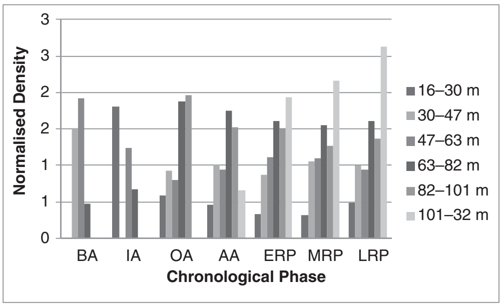
Class	Area (ha)
16–30 m	676
30–47 m	422
47–63 m	991
63–82 m	453
82–101 m	167
101–32 m	44



Altitude: Normalised Populations



Altitude: Normalised Densities



A3. Association between sites and altitude.

Population in Different Areas

Area (ha)	Class	BA	IA	OA	AA	ER	MR	LR
676	16–30 m		4	6	11	8	9	17
422	30–47 m	3		6	15	13	19	22
991	47–63 m	9	4	12	33	39	46	49
453	63–82 m	1	1	13	28	26	30	38
167	82–101 m			5	9	9	9	12
44	101–32 m				1	3	4	6
2,753		13	9	42	97	98	117	144

Normalised Areas and Populations

Area frac	Class	BA	IA	OA	AA	ER	MR	LR
0.25	16–30 m	0.00	0.44	0.14	0.11	0.08	0.08	0.12
0.15	30–47 m	0.23	0.00	0.14	0.15	0.13	0.16	0.15
0.36	47–63 m	0.69	0.44	0.29	0.34	0.40	0.39	0.34
0.16	63–82 m	0.08	0.11	0.31	0.29	0.27	0.26	0.26
0.06	82–101 m	0.00	0.00	0.12	0.09	0.09	0.08	0.08
0.02	101–32 m	0.00	0.00	0.00	0.01	0.03	0.03	0.04

Normalised Density

Class	BA	IA	OA	AA	ER	MR	LR
16–30 m	0.00	1.81	0.58	0.46	0.33	0.31	0.48
30–47 m	1.51	0.00	0.93	1.01	0.87	1.06	1.00
47–63 m	1.92	1.23	0.79	0.95	1.11	1.09	0.95
63–82 m	0.47	0.67	1.88	1.75	1.61	1.56	1.60
82–101 m	0.00	0.00	1.96	1.53	1.51	1.27	1.37
101–32 m	0.00	0.00	0.00	0.65	1.93	2.16	2.63

Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
16–30 m	3.19	2.21	10.32	23.84	24.08	28.75	35.39
30–47 m	1.99	1.38	6.43	14.85	15.01	17.92	22.05
47–63 m	4.68	3.24	15.12	34.92	35.28	42.12	51.84
63–82 m	2.14	1.48	6.91	15.97	16.13	19.26	23.71
82–101 m	0.79	0.55	2.55	5.89	5.95	7.10	8.74
101–32 m	0.21	0.14	0.66	1.53	1.55	1.85	2.28

Expected Standard Deviations

Class	BA	IA	OA	AA	ER	MR	LR
16–30 m	1.79	1.49	3.21	4.88	4.91	5.36	5.95
30–47 m	1.41	1.17	2.54	3.85	3.87	4.23	4.70
47–63 m	2.16	1.80	3.89	5.91	5.94	6.49	7.20
63–82 m	1.46	1.22	2.63	4.00	4.02	4.39	4.87
82–101 m	0.89	0.74	1.60	2.43	2.44	2.66	2.96
101–32 m	0.45	0.38	0.82	1.24	1.25	1.36	1.51

Chi-Square

Class	BA	IA	OA	AA	ER	MR	LR
16–30 m	3.19	1.45	1.81	6.91	10.74	13.57	9.55
30–47 m	0.51	1.38	0.03	0.00	0.27	0.07	0.00
47–63 m	3.99	0.18	0.64	0.11	0.39	0.36	0.16
63–82 m	0.61	0.16	5.36	9.07	6.04	5.99	8.62
82–101 m	0.79	0.55	2.36	1.65	1.57	0.51	1.22
101–32 m	0.21	0.14	0.66	0.19	1.35	2.49	6.08
Chi-Square	**9.30**	**3.85**	**10.86**	**17.92**	**20.36**	**22.98**	**25.62**
Chi-Sq. Prob.	**0.0977**	**0.5712**	**0.0542**	**0.0031**	**0.0011**	**0.0003**	**0.0001**

Lower Error Range Values of Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
16–30 m	–0.38	–0.76	3.90	14.07	14.27	18.03	23.49
30–47 m	–0.83	–0.97	1.36	7.15	7.26	9.45	12.66
47–63 m	0.35	–0.36	7.34	23.10	23.40	29.14	37.44
63–82 m	–0.79	–0.95	1.66	7.98	8.10	10.48	13.97
82–101 m	–0.99	–0.93	–0.64	1.03	1.07	1.77	2.83
101–32 m	–0.70	–0.61	–0.97	–0.94	–0.94	–0.87	–0.74

Higher Error Range Values of Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
16–30 m	6.77	5.19	16.75	33.60	33.90	39.48	47.28
30–47 m	4.81	3.73	11.50	22.56	22.76	26.38	31.44
47–63 m	9.01	6.84	22.90	46.74	47.16	55.10	66.24
63–82 m	5.07	3.92	12.17	23.96	24.17	28.04	33.44
82–101 m	2.57	2.02	5.74	10.74	10.83	12.43	14.65
101–32 m	1.11	0.90	2.29	4.01	4.04	4.57	5.30

(1) If probability is smaller than .05 then the random hypothesis can be rejected.
(2) To compute the chi-square probability the calculator on http://faculty.vassar.edu/lowry/tabs.html?#csq was used.
(3) The degree of freedom to calculate the chi-sqare probability is the number of classes decreased by 1 because the sample is a determined finite number.

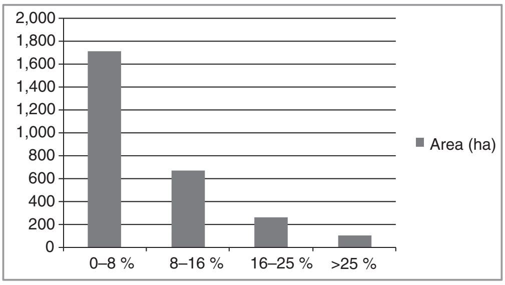
A4. Association between sites and altitude: chi-square test.

Populations in Different Areas

Class	BA	IA	OA	AA	ERP	MRP	LRP
0–8 %	3	6	27	56	58	67	84
8–16 %	5	2	12	34	37	41	46
16–25 %	2	1	2	5	3	8	7
> 25 %	3		1	2	0	1	7
	13	9	42	97	98	117	144

Land Distribution According to Slope Class

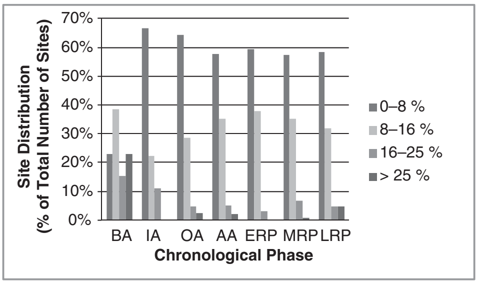
Class	Area (ha)
0–8 %	1,718
8–16 %	668
16–25 %	262
> 25 %	105



Normalised Populations and Areas

Class	BA	IA	OA	AA	ERP	MRP	LRP
0–8 %	23%	67%	64%	58%	59%	57%	58%
8–16 %	38%	22%	29%	35%	38%	35%	32%
16–25 %	15%	11%	5%	5%	3%	7%	5%
> 25 %	23%	0%	2%	2%	0%	1%	5%

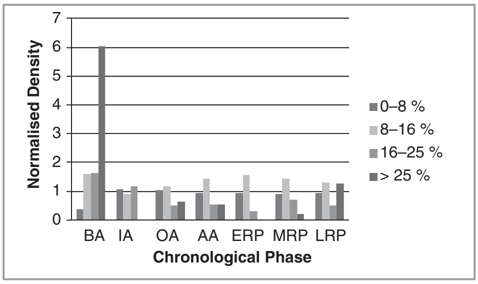
Slope (%): Normalised Populations



Normalised Densities

Class	BA	IA	OA	AA	ERP	MRP	LRP
0–8 %	0.37	1.07	1.03	0.93	0.95	0.92	0.93
8–16 %	1.58	0.92	1.18	1.44	1.55	1.44	1.32
16–25 %	1.62	1.17	0.50	0.54	0.32	0.72	0.51
> 25 %	6.04	0.00	0.62	0.54	0.00	0.22	1.27

Slope (%): Normalised Densities



A5. Association between sites and slope.

Population in Different Areas

	Area (ha)	Class	BA	IA	OA	AA	ER	MR	LR
	1,718	0–8 %	3	6	27	56	58	67	84
	668	8–16 %	5	2	12	34	37	41	46
	262	16–25 %	2	1	2	5	3	8	7
	105	> 25 %	3		1	2	0	1	7
Total	2,753		13	9	42	97	98	117	144

Normalised Areas and Populations

Area frac	Class	BA	IA	OA	AA	ER	MR	LR
0.62	0–8 %	0.23	0.67	0.64	0.58	0.59	0.57	0.58
0.24	8–16 %	0.38	0.22	0.29	0.35	0.38	0.35	0.32
0.10	16–25 %	0.15	0.11	0.05	0.05	0.03	0.07	0.05
0.04	> 25 %	0.23	0.00	0.02	0.02	0.00	0.01	0.05

Normalised Density

Class	BA	IA	OA	AA	ER	MR	LR
0–8 %	0.37	1.07	1.03	0.93	0.95	0.92	0.93
8–16 %	1.58	0.92	1.18	1.44	1.55	1.44	1.32
16–25 %	1.62	1.17	0.50	0.54	0.32	0.72	0.51
> 25 %	6.04	0.00	0.62	0.54	0.00	0.22	1.27

Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
0–8 %	8.11	5.62	26.21	60.53	61.15	73.01	89.85
8–16 %	3.16	2.19	10.20	23.55	23.79	28.41	34.96
16–25 %	1.24	0.86	3.99	9.22	9.31	11.12	13.68
> 25 %	0.50	0.34	1.60	3.71	3.74	4.47	5.50

Expected Standard Deviations

Class	BA	IA	OA	AA	ER	MR	LR
0–8 %	2.85	2.37	5.12	7.78	7.82	8.54	9.48
8–16 %	1.78	1.48	3.19	4.85	4.88	5.33	5.91
16–25 %	1.11	0.92	2.00	3.04	3.05	3.33	3.70
> 25 %	0.70	0.59	1.27	1.93	1.93	2.11	2.35

Chi-Square

Class	BA	IA	OA	AA	ER	MR	LR
0–8 %	3.22	0.03	0.02	0.34	0.16	0.49	0.38
8–16 %	1.08	0.02	0.32	4.64	7.33	5.58	3.48
16–25 %	0.47	0.02	0.99	1.93	4.28	0.87	3.26
> 25 %	12.62	0.34	0.23	0.79	3.74	2.69	0.41
Chi-Square	**17.39**	**0.41**	**1.56**	**7.69**	**15.51**	**9.64**	**7.54**
Chi-Sq. Prob.	**0.0006**	**0.9381**	**0.6685**	**0.0529**	**0.0014**	**0.0219**	**0.0565**

Lower Error Range Values of Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
0–8 %	2.42	0.88	15.97	44.97	45.51	55.92	70.89
8–16 %	–0.40	–0.77	3.81	13.85	14.04	17.75	23.14
16–25 %	–0.99	–0.99	0.00	3.14	3.21	4.45	6.28
> 25 %	–0.91	–0.83	–0.93	–0.14	–0.13	0.24	0.81

Higher Error Range Values of Expected Mean Value Variances

Class	BA	IA	OA	AA	ER	MR	LR
0–8 %	13.81	10.36	36.45	76.09	76.79	90.09	108.81
8–16 %	6.71	5.14	16.58	33.26	33.55	39.07	46.79
16–25 %	3.46	2.70	7.99	15.29	15.41	17.78	21.08
> 25 %	1.91	1.52	4.14	7.56	7.61	8.70	10.19

(1) If probability is smaller than .05 then the random hypothesis can be rejected.
(2) To compute the chi-square probability the calculator on http://faculty.vassar.edu/lowry/tabs.html?#csq was used.
(3) The degree of freedom to calculate the chi-square probability is the number of classes decreased by 1 because the sample is a determined finite number.

A6. Association between sites and slope: chi-square test.

Populations in Different Areas

	Area (ha)	Class	BA	IA	OA	AA	ERP	MRP	LRP
	1,568	0–5 min	5	3	24	46	43	46	72
	684	5–10 min	5	2	11	34	39	48	49
	387	10–20 min	3	4	6	14	14	21	20
	106	20–30 min			1	2	2	2	3
	1	> 30 min							
Total	2,747		13	9	42	96	98	117	144

Normalised Populations and Areas

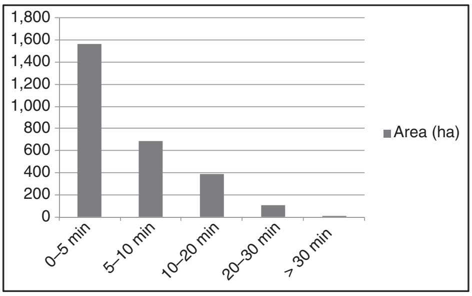
Area frac	Class	BA	IA	OA	AA	ERP	MRP	LRP
0.5710	0–5 min	38%	33%	57%	48%	44%	39%	50%
0.2489	5–10 min	38%	22%	26%	35%	40%	41%	34%
0.1409	10–20 min	23%	44%	14%	15%	14%	18%	14%
0.0387	20–30 min	0%	0%	2%	2%	2%	2%	2%
0.0005	> 30 min	0%	0%	0%	0%	0%	0%	0%

Normalised Densities

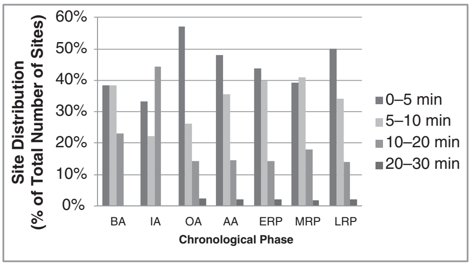
Class	BA	IA	OA	AA	ERP	MRP	LRP
0–5 min	0.67	0.58	1.00	0.84	0.77	0.69	0.88
5–10 min	1.55	0.89	1.05	1.42	1.60	1.65	1.37
10–20 min	1.64	3.15	1.01	1.03	1.01	1.27	0.99
20–30 min	0.00	0.00	0.61	0.54	0.53	0.44	0.54
> 30 min	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Land Distribution According to Walking Distance Class

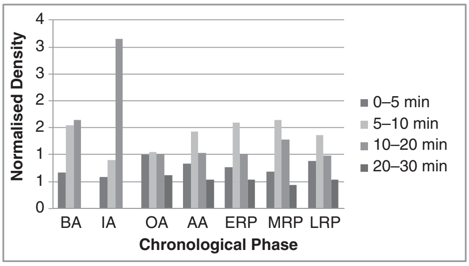
Class	Area (ha)
0–5 min	1568
5–10 min	684
10–20 min	387
20–30 min	106
> 30 min	1



Walking Distance from Modern Rivers: Normalised Populations



Walking Distance from Modern Rivers: Normalised Densities



A7. Association between sites and walking distance from rivers.

Population in Different Areas

	Area (ha)	Class	BA	IA	OA	AA	ER	MR	LR
	1,568	0–5 min	5	3	24	46	43	46	72
	684	5–10 min	5	2	11	34	39	48	49
	387	10–20 min	3	4	6	14	14	21	20
	106	20–30 min			1	2	2	2	3
	1	> 30 min							
Total	2,747		13	9	42	96	98	117	144

Normalised Areas and Populations

Area frac	**Class**	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0.57097	0–5 min	0.38	0.33	0.57	0.48	0.44	0.39	0.50
0.24888	5–10 min	0.38	0.22	0.26	0.35	0.40	0.41	0.34
0.14094	10–20 min	0.23	0.44	0.14	0.15	0.14	0.18	0.14
0.03875	20–30 min	0.00	0.00	0.02	0.02	0.02	0.02	0.02
0.00046	> 30 min	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Normalised Density

Class	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0–5 min	0.67	0.58	1.00	0.84	0.77	0.69	0.88
5–10 min	1.55	0.89	1.05	1.42	1.60	1.65	1.37
10–20 min	1.64	3.15	1.01	1.03	1.01	1.27	0.99
20–30 min	0.00	0.00	0.61	0.54	0.53	0.44	0.54
> 30 min	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Expected Mean Value Variances

Class	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0–5 min	7.42	5.14	23.98	54.81	55.96	66.80	82.22
5–10 min	3.24	2.24	10.45	23.89	24.39	29.12	35.84
10–20 min	1.83	1.27	5.92	13.53	13.81	16.49	20.30
20–30 min	0.50	0.35	1.63	3.72	3.80	4.53	5.58
> 30 min	0.01	0.00	0.02	0.04	0.05	0.05	0.07

Expected Standard Deviations

Class	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0–5 min	2.72	2.27	4.90	7.40	7.48	8.17	9.07
5–10 min	1.80	1.50	3.23	4.89	4.94	5.40	5.99
10–20 min	1.35	1.13	2.43	3.68	3.72	4.06	4.51
20–30 min	0.71	0.59	1.28	1.93	1.95	2.13	2.36
> 30 min	0.08	0.06	0.14	0.21	0.21	0.23	0.26

Chi-Square

Class	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0–5 min	0.79	0.89	0.00	1.42	3.00	6.48	1.27
5–10 min	0.96	0.03	0.03	4.28	8.75	12.24	4.83
10–20 min	0.74	5.88	0.00	0.02	0.00	1.23	0.00
20–30 min	0.50	0.35	0.24	0.80	0.85	1.42	1.19
> 30 min	0.01	0.00	0.02	0.04	0.05	0.05	0.07
Chi-Square	**3.01**	**7.15**	**0.29**	**6.55**	**12.65**	**21.43**	**7.37**
Chi-Sq. Prob.	**0.5562**	**0.1282**	**0.9905**	**0.1617**	**0.0131**	**0.0003**	**0.1176**

Lower Error Range Values of Expected Mean Value Variances

Class	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0–5 min	1.97	0.60	14.19	40.01	40.99	50.46	64.09
510 min	–0.36	–0.75	3.99	14.12	14.51	18.33	23.87
10– 20 min	–0.87	–0.98	1.05	6.17	6.38	8.37	11.29
20–30 min	–0.92	–0.83	–0.92	–0.14	–0.10	0.28	0.86
> 30 min	–0.15	–0.12	–0.26	–0.38	–0.38	–0.41	–0.45

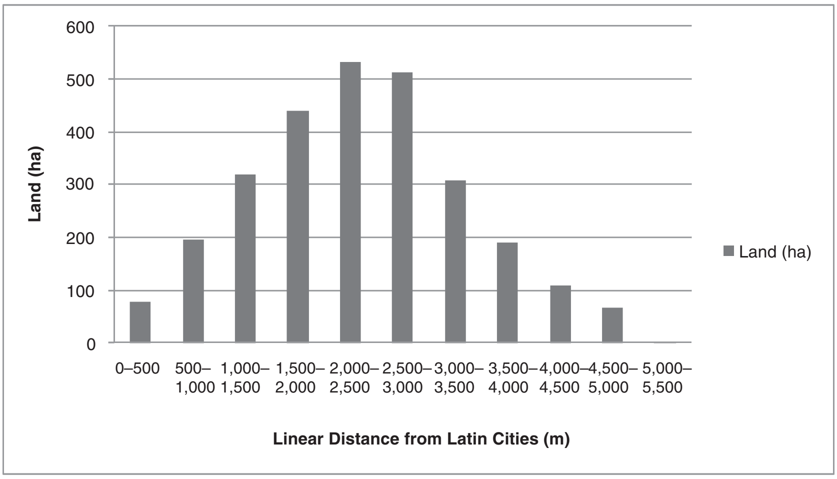
Higher Error Range Values of Expected Mean Value Variances

Class	**BA**	**IA**	**OA**	**AA**	**ER**	**MR**	**LR**
0–5 min	12.87	9.67	33.77	69.62	70.92	83.15	100.36
5–10 min	6.83	5.23	16.92	33.67	34.27	39.91	47.81
10–20 min	4.54	3.52	10.79	20.89	21.24	24.61	29.31
20–30 min	1.92	1.53	4.18	7.58	7.69	8.79	10.30
> 30 min	0.16	0.13	0.30	0.47	0.47	0.52	0.58

(1) If probability is smaller than .05 then the random hypothesis can be rejected.
(2) To compute the chi-square probability the calculator on http://faculty.vassar.edu/lowry/tabs.html?#csq was used.
(3) The degree of freedom to calculate the chi-square probability is the number of classes decreased by 1 because the sample is a determined finite number.

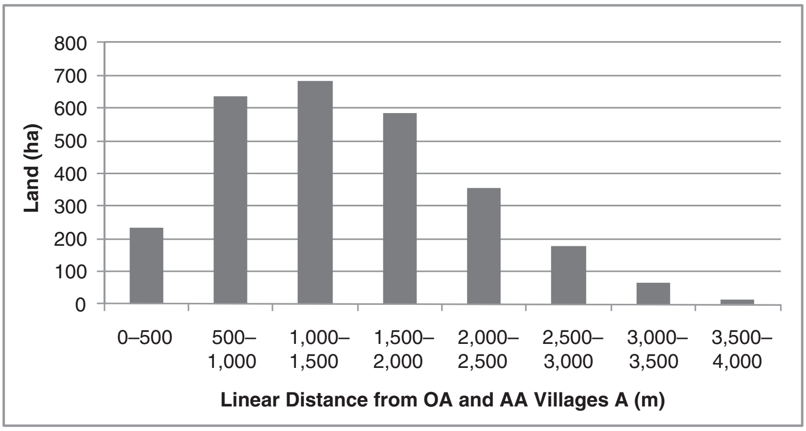
A8. Association between sites and walking distance from rivers: chi-square test.

	Distance from Latin Cities (m)	Land (ha)	Area (m^2)
1	0–500	78.6083	786,083
2	500–1,000	195.9500	1,959,500
3	1,000–1,500	320.2423	3,202,423
4	1,500–2,000	440.4601	4,404,601
5	2,000–2,500	531.1923	5,311,923
6	2,500–3,000	511.5517	5,115,517
7	3,000–3,500	308.9896	3,089,896
8	3,500–4,000	189.8275	1,898275
9	4,000–4,500	110.1589	1,101,589
10	4,500–5,000	65.7834	657,834
11	5,000–5,500	0.0034	34



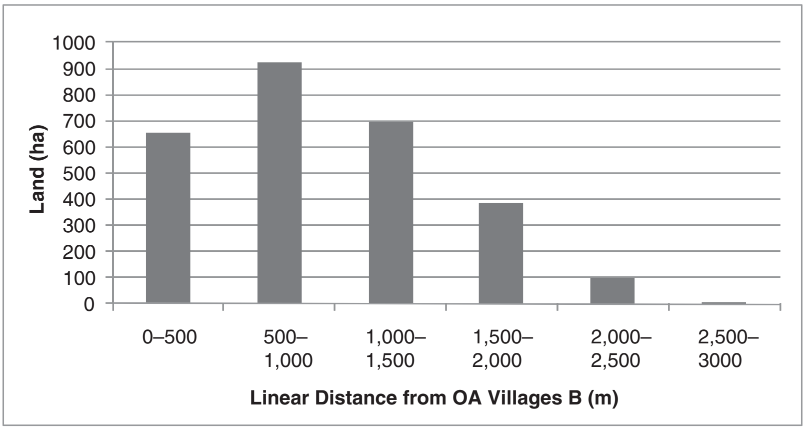
A9. Land distribution according to distance from Latin cities, Orientalizing and Archaic Ages.

Class	Distance from Villages A (m)	Land (ha)	Area (m^2)
1	0–500	235.8252	2,358,252
2	500–1,000	634.7656	6,347,656
3	1,000–1,500	682.6732	6,826,732
4	1,500–2,000	584.9138	5,849,138
5	2,000–2,500	354.154	3,541,540
6	2,500–3,000	178.2891	1,782,891
7	3,000–3,500	66.9807	669,807
8	3,500–4,000	15.1658	151,658



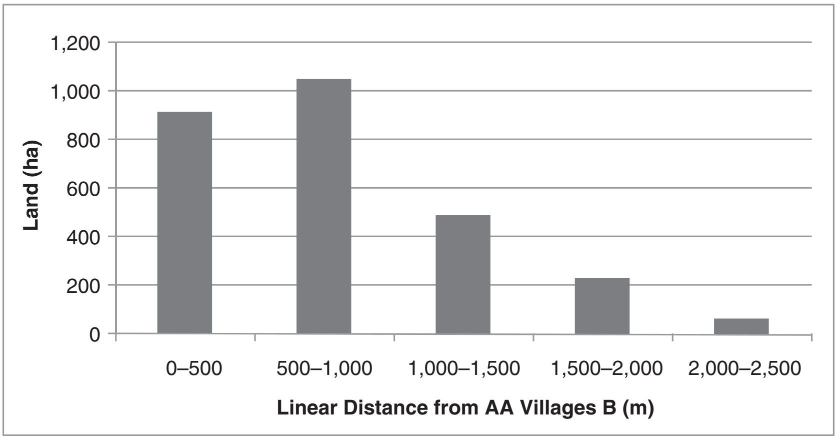
A10. Land distribution according to distance from villages A, Orientalizing and Archaic Ages.

Class	Distance from Villages B (m)	Area (ha)	Area (m^2)
1	0–500	653.2037	6,532,037
2	500–1,000	921.2385	9,212,385
3	1,000–1,500	693.8399	6,938,399
4	1,500–2,000	384.6117	3,846,117
5	2,000–2,500	97.1177	971,177
6	2,500–3000	2.7558	27,558



A11. Land distribution according to distance from villages B, Orientalizing Age.

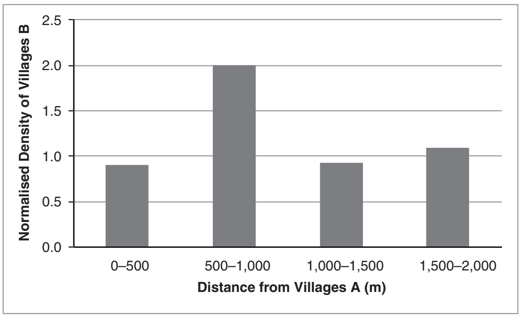
Class	Distance from Villages B (m)	Area (ha)	Area (m^2)
1	0–500	918.2701	9,182,701
2	500–1,000	1051.1582	10,511,582
3	1,000–1,500	488.0065	4,880,065
4	1,500–2,000	229.7894	2,297,894
5	2,000–2,500	65.5433	655,433



A12. Land distribution according to distance from villages B, Archaic Age.

Distribution According to Linear Distance from Villages A (Fixed Buffer Zones of 500 m Each)

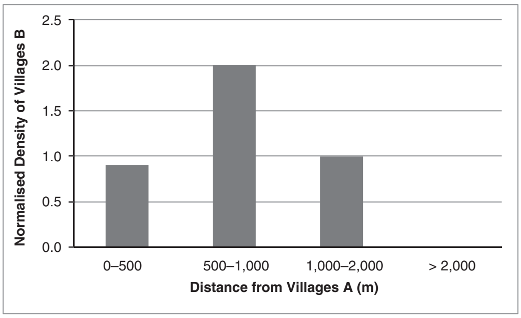
No. of Sites	Area (m^2)	Area (ha)	Distance from Villages A (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction (%)	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
1.0000	2,358,252.0000	235.8252	0–500	0.0042	0.0857	8	0–500	0.8977
6.0000	6,347,656.0000	634.7656	500–1,000	0.0095	0.2307	46	500–1,000	2.0010
3.0000	6,826,732.0000	682.6732	1,000–1,500	0.0044	0.2481	23	1,000–1,500	0.9303
3.0000	5,849,138.0000	584.9138	1,500–2,000	0.0051	0.2125	23	1,500–2,000	1.0858
13.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Villages A (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	235.8252	0.0857	0–500	1.0000	1.1137	1.0553	0.0116
	634.7656	0.2306	500–1,000	6.0000	2.9977	1.7314	3.0069
	682.6732	0.2480	1,000–1,500	3.0000	3.2239	1.7955	0.0156
	584.9138	0.2125	1,500–2,000	3.0000	2.7623	1.6620	0.0205
	354.1540	0.1287	2,000–2,500	0.0000	1.6725	1.2933	1.6725
	178.2891	0.0648	2,500–3,000	0.0000	0.8420	0.9176	0.8420
	66.9807	0.0243	3,000–3,500	0.0000	0.3163	0.5624	0.3163
	15.1658	0.0055	3,500–4,000	0.0000	0.0716	0.2676	0.0716
Total	2752.7674			13.0000			
						Chi-Square	5.9570
						Chi-Sq. Prob.	0.4280

Distribution According to Reorganised Classes



Chi-Square Test

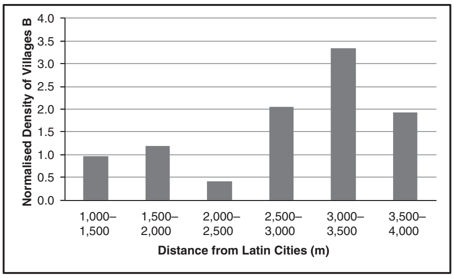
	Area (ha)	Area Fraction	Distance from Villages A (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	235.8252	0.0857	0–500	1.0000	1.1137	1.0553	0.0116	0.8979
	634.7656	0.2306	500–1,000	6.0000	2.9977	1.7314	3.0069	2.0015
	1,267.5870	0.4605	1,000–2,000	6.0000	5.9862	2.4467	0.0000	1.0023
	614.5896	0.2233	> 2,000	0.0000	2.9024	1.7036	2.9024	0.0000
Total	2,752.7674			13.0000				
						Chi-Square	5.9210	
						Chi-Sq. Prob.	*0.1155*	

	Area (ha)	Area Fraction	Distance from Villages A (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	2138.1778	0.7767	0–2,000	13.0000	10.0976	3.1777	0.8343	1.2874
	614.5896	0.2233	> 2,000	0.0000	2.9024	1.7036	2.9024	0.0000
Total	2752.7674			13.0000				
						Chi-Square	3.7367	
						Chi-Sq. Prob.	**0.0532**	

A13. Distribution of villages B according to distance from villages A, Orientalizing Age.

Distribution According to Linear Distance from Latin Cities (Fixed Buffer Zones of 500 m Each)

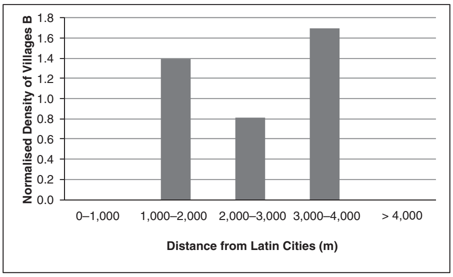
	No. of Sites	Area (m^2)	Area (ha)	Distance from Latin Cities (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction (%)	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
	2	3,202,423.0000	440.4601	1,000– 1,500	0.0045	0.1601	0.1538	1,000–1,500	0.9612
	3	4,404,601.0000	531.1923	1,500– 2,000	0.0056	0.1930	0.2308	1,500–2,000	1.1956
	1	5,311,923.0000	511.5517	2,000– 2,500	0.0020	0.1859	0.0769	2,000–2,500	0.4138
	3	5,115,517.0000	308.9896	2,500– 3,000	0.0097	0.1123	0.2308	2,500–3,000	2.0553
	3	3,089,896.0000	189.8275	3,000– 3,500	0.0158	0.0690	0.2308	3,000–3,500	3.3455
	1	1,898,275.0000	110.1589	3,500– 4,000	0.0091	0.0400	0.0769	3,500–4,000	1.9217
Total	13.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	78.6083	0.0286	0–500	0.0000	0.3712	0.6093	0.3712
	195.9500	0.0712	500–1,000	0.0000	0.9254	0.9620	0.9254
	320.2423	0.1163	1,000–1,500	2.0000	1.5124	1.2298	0.1572
	440.4601	0.1600	1,500–2,000	3.0000	2.0801	1.4422	0.4068
	531.1923	0.1930	2,000–2,500	1.0000	2.5086	1.5838	0.9072
	511.5517	0.1858	2,500–3,000	3.0000	2.4158	1.5543	0.1413
	308.9896	0.1122	3,000–3,500	3.0000	1.4592	1.2080	1.6269
	189.8275	0.0690	3,500–4,000	1.0000	0.8965	0.9468	0.0120
	110.1589	0.0400	4,000–4,500	0.0000	0.5202	0.7213	0.5202
	65.7834	0.0239	4,500–5,000	0.0000	0.3107	0.5574	0.3107
	0.0034	0.0000	5,000–5,500	0.0000	0.0000	0.0040	0.0000
Total	2752.7675			13.0000			
						Chi-Square	5.3789
						Chi-Sq. Prob.	0.8645

Distribution According to Reorganised Classes



Chi-Square Test

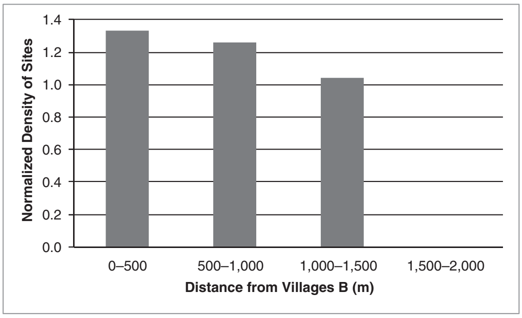
	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	274.5583	0.0997	0–1,000	0.0000	1.2966	1.1387	1.2966	0.0000
	760.7024	0.2763	1,000–2,000	5.0000	3.5924	1.8954	0.5515	1.3918
	1,042.7440	0.3788	2,000–3,000	4.0000	4.9244	2.2191	0.1735	0.8123
	498.8171	0.1812	3,000–4,000	4.0000	2.3557	1.5348	1.1478	1.6980
	175.9457	0.0639	> 4,000	0.0000	0.8309	0.9115	0.8309	0.0000
Total	2,752.7675			13.0000				
						Chi-Square	4.0003	
						Chi-Sq. Prob.	*0.4056*	

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	274.5583	0.0997	0–1,000	0.0000	1.6956	1.3021	1.6956	0.0000
	2,302.2635	0.8363	1,000–4,000	13.0000	14.2179	3.7707	0.1043	1.1957
	175.9457	0.0639	> 4,000	0.0000	1.0866	1.0424	1.0866	0.0000
Total	2,752.7675			13.0000				
						Chi-Square	2.8865	
						Chi-Sq. Prob.	*0.2362*	

A14. Distribution of villages B according to distance from Latin Cities, Orientalizing Age.

Distribution According to Linear Distance from Villages B (Fixed Buffer Zones of 500 m Each)

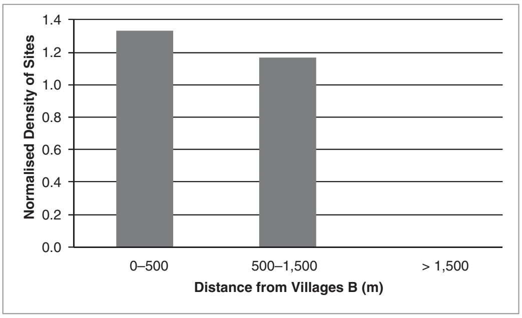
	No. of Sites	Area (m^2)	Area (ha)	Distance from Villages B (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction (%)	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
	6.0000	6,532,037.0000	653.2037	0–500	0.0092	0.2374	31.6	0–500	1.3304
	8.0000	9,212,385.0000	921.2385	500–1,000	0.0087	0.3348	42.1	500–1,000	1.2578
	5.0000	6,938,399.0000	693.8399	1,000–1,500	0.0072	0.2521	26.3	1,000–1,500	1.0438
	0.0000	3,846,117.0000	384.6117	1,500–2,000	0.0000	0.1398	0.0	1,500–2,000	0.0000
Total	19.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Villages B (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	653.2037	0.2373	0–500	6.0000	4.5085	2.1233	0.4934
	921.2385	0.3347	500–1,000	8.0000	6.3585	2.5216	0.4238
	693.8399	0.2521	1,000–1,500	5.0000	4.7890	2.1884	0.0093
	384.6117	0.1397	1,500–2,000	0.0000	2.6546	1.6293	2.6546
	97.1177	0.0353	2,000–2,500	0.0000	0.6703	0.8187	0.6703
	2.7558	0.0010	2,500–3,000	0.0000	0.0190	0.1379	0.0190
Total	2,752.7673			19.0000			
						Chi-Square	4.2705
						Chi-Sq. Prob.	0.5112

Distribution According to Reorganised Classes



Chi-Square Test

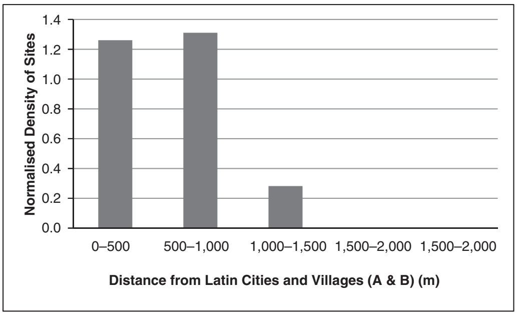
	Area (ha)	Area Fraction	Distance from Villages B (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	653.2037	0.2373	0–500	6.0000	4.5085	2.1233	0.4934	1.3308
	1,615.0784	0.5867	500–1,500	13.0000	11.1475	3.3388	0.3078	1.1662
	484.4852	0.1760	> 1,500	0.0000	3.3440	1.8287	3.3440	0.0000
Total	2,752.7673			19.0000				
						Chi-Square	4.1452	
						Chi-Sq. Prob.	*0.1259*	

	Area (ha)	Area Fraction	Distance from Villages B (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	2,268.2821	0.8240	0–1,500	19.0000	15.6560	3.9568	0.7142	1.2136
	484.4852	0.1760	> 1,500	0.0000	3.3440	1.8287	3.3440	0.0000
Total	2,752.7673			19.0000				
						Chi-Square	4.0582	
						Chi-Sq. Prob.	**0.0440**	

A15. Distribution of sites according to distance from villages B, Orientalizing Age.

Distribution According to Linear Distance from Cities and Villages (A & B)
(Fixed Buffer Zones of 500 m Each)

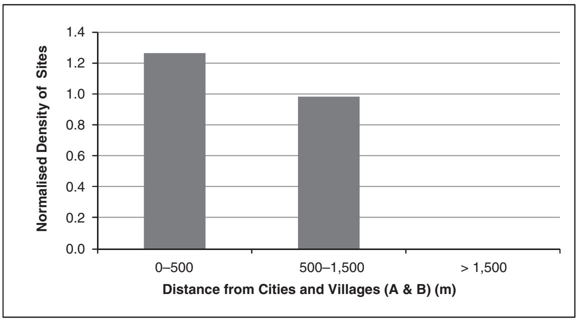
	No. of Sites	Area (m^2)	Area (ha)	Distance from Cities and Villages (A & B) (m)	Density of Villages (Sites/ha)	Land Fraction	Site Fraction (%)	Distance from Cities and Villages (A & B) (m)	Normalised Density (Site Fraction/ Land Fraction)
	8.0000	9,200,289.0000	920.0289	0–500	0.0087	0.3343	42.1	0– 500	1.2595
	10.0000	11,048,307.0000	1,104.8307	500–1,000	0.0091	0.4015	52.6	500– 1,000	1.3110
	1.0000	5,156,064.0000	515.6064	1,000–1,500	0.0019	0.1874	5.3	1,000– 1,500	0.2809
	0.0000	20,432,60.0000	204.3260	1,500–2,000	0.0000	0.0742	0.0	1,500– 2,000	0.0000
	0.0000	79,755.0000	7.9755	1,500–2,000	0.0000	0.0029	0.0	1,500– 2,000	0.0000
Total	19.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Cities and Villages (A & B) (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	920.0289	0.3342	0–500	8.0000	6.3502	2.5200	0.4286
	1,104.8307	0.4014	500–1,000	10.0000	7.6257	2.7615	0.7392
	515.6064	0.1873	1,000–1,500	1.0000	3.5588	1.8865	1.8398
	204.3260	0.0742	1,500–2,000	0.0000	1.4103	1.1876	1.4103
	7.9755	0.0029	2,000–2,500	0.0000	0.0550	0.2346	0.0550
Total	2,752.7675			19.0000			
						Chi-Square	4.4730
						Chi-Sq. Prob.	0.3458

Distribution According to Reorganised Classes



Chi-Square Test

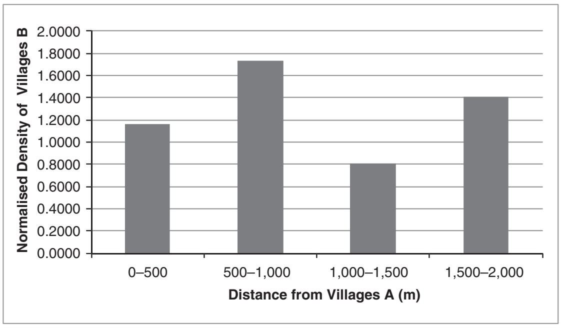
	Area (ha)	Area Fraction	Distance from Cities and Villages (A & B) (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	920.0289	0.3342	0–500	8.0000	6.3502	2.5200	0.4286	1.2598
	1,620.4371	0.5887	500–1,500	11.0000	11.1845	3.3443	0.0030	0.9835
	212.3015	0.0771	>1,500	0.0000	1.4653	1.2105	1.4653	0.0000
Total	2,752.7675			19.0000				
						Chi-Square	1.8970	
						Chi-Sq. Prob.	0.3873	

	Area (ha)	Area Fraction	Distance from Cities and Villages (A & B) (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	2,540.4660	0.9229	0–1,500	19.0000	17.5347	4.1874	0.1225	1.0836
	212.3015	0.0771	> 1,500	0.0000	1.4653	1.2105	1.4653	0.0000
Total	2,752.7675			19.0000				
						Chi-Square	1.5878	
						Chi-Sq. Prob.	*0.2076*	

A16. Distribution of sites according to distance from cities and villages (A and B), Orientalizing Age.

Distribution According to Linear Distance from Latin Cities (Fixed Buffer Zones of 500 m Each)

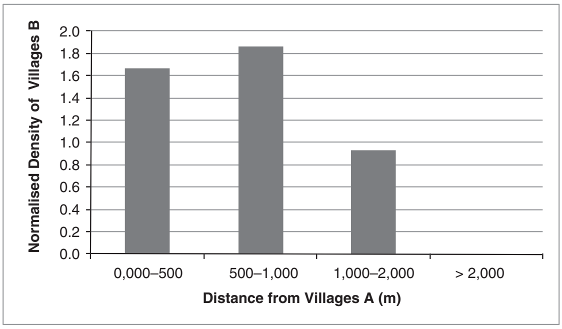
	No. of Sites	Area (m^2)	Area (ha)	Distance from Villages A (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
	2.00000	2,358,252.0000	235.8252	0–500	0.0085	0.0857	0.1000	0–500	1.1670
	8.00000	6,347,656.0000	634.7656	500–1,000	0.0126	0.2307	0.4000	500–1,000	1.7342
	4.00000	6,826,732.0000	682.6732	1,000–1,500	0.0059	0.2481	0.2000	1,000–1,500	0.8062
	6.00000	5,849,138.0000	584.9138	1,500–2,000	0.0103	0.2125	0.3000	1,500–2,000	1.4115
Total	20.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Villages A (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	235.8252	0.0857	0–500	2.0000	1.7134	1.3090	0.0480
	634.7656	0.2306	500–1,000	8.0000	4.6118	2.1475	2.4892
	682.6732	0.2480	1,000–1,500	4.0000	4.9599	2.2271	0.1858
	584.9138	0.2125	1,500–2,000	6.0000	4.2496	2.0615	0.7209
	354.1540	0.1287	2,000–2,500	0.0000	2.5731	1.6041	2.5731
	178.2891	0.0648	2,500–3,000	0.0000	1.2953	1.1381	1.2953
	66.9807	0.0243	3,000–3,500	0.0000	0.4866	0.6976	0.4866
	15.1658	0.0055	3,500–4,000	0.0000	0.1102	0.3319	0.1102
Total	2,752.7674			20.0000			
						Chi-Square	7.9091
						Chi-Sq. Prob.	*0.3407*

Distribution According to Reorganised Classes



Chi-Square Test

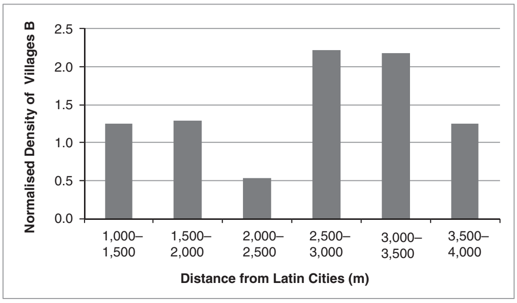
	Area (ha)	Area Fraction	Distance from Villages A (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	235.8252	0.0857	0,000–500	2.0000	1.1994	1.0952	0.5345	1.6676
	634.7656	0.2306	500–1,000	6.0000	3.2283	1.7967	2.3797	1.8586
	1,267.5870	0.4605	1,000–2,000	6.0000	6.4467	2.5390	0.0310	0.9307
	614.5896	0.2233	> 2,000	0.0000	3.1257	1.7680	3.1257	0.0000
Total	2,752.7674			14.0000				
						Chi-Square	6.0708	
						Chi-Sq. Prob.	*0.1082*	

	Area (ha)	Area Fraction	Distance from Villages A (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	2138.1778	0.7767	0–2,000	14.0000	10.8743	3.2976	0.8984	1.2874
	614.5896	0.2233	> 2,000	0.0000	3.1257	1.7680	3.1257	0.0000
Total	2,752.7674			14.0000				
						Chi-Square	4.0241	
						Chi-Sq. Prob.	**0.0049**	

A17. Distribution of villages B according to distance from villages A, Archaic Age.

Distribution According to Linear Distance from Latin Cities (Fixed Buffer Zones of 500 m Each)

	No. of Sites	Area (m^2)	Area (ha)	Distance from Latin Cities (m)	Density of Villages (Sites/ha)	Land Fraction	Site Fraction	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
	4.00000	3,202,423.0000	440.4601	1,000–1,500	0.0091	0.1601	0.2000	1,000–1,500	1.2496
	5.00000	4,404,601.0000	531.1923	1,500–2,000	0.0094	0.1930	0.2500	1,500–2,000	1.2952
	2.00000	5,311,923.0000	511.5517	2,000–2,500	0.0039	0.1859	0.1000	2,000–2,500	0.5380
	5.00000	5,115,517.0000	308.9896	2,500–3,000	0.0162	0.1123	0.2500	2,500–3,000	2.2266
	3.00000	3,089,896.0000	189.8275	3,000–3,500	0.0158	0.0690	0.1500	3,000–3,500	2.1746
	1.00000	1,898,275.0000	110.1589	3,500–4,000	0.0091	0.0400	0.0500	3,500–4,000	1.2491
Total	20.0000								

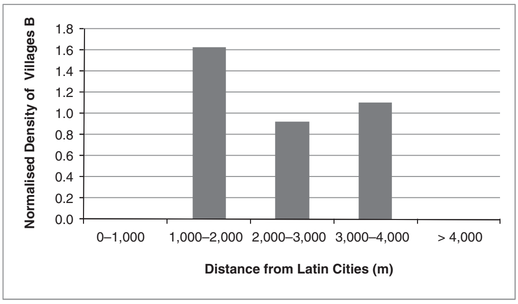


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	78.6083	0.0286	0–500	0.0000	0.5711	0.7557	0.5711
	195.9500	0.0712	500–1,000	0.0000	1.4237	1.1932	1.4237
	320.2423	0.1163	1,000–1,500	4.0000	2.3267	1.5254	1.2034
	440.4601	0.1600	1,500–2,000	5.0000	3.2001	1.7889	1.0123
	531.1923	0.1930	2,000–2,500	2.0000	3.8593	1.9645	0.8958
	511.5517	0.1858	2,500–3,000	5.0000	3.7166	1.9279	0.4431
	308.9896	0.1122	3,000–3,500	3.0000	2.2449	1.4983	0.2540
	189.8275	0.0690	3,500–4,000	1.0000	1.3792	1.1744	0.1042
	110.1589	0.0400	4,000–4,500	0.0000	0.8004	0.8946	0.8004
	65.7834	0.0239	4,500–5,000	0.0000	0.4779	0.6913	0.4779
	0.0034	0.0000	5,000–5,500	0.0000	0.0000	0.0050	0.0000
Total	2,752.7675			20.0000			

Chi-Square	7.1860
Chi-Sq. Prob.	*0.7078*

Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	N of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	274.5583	0.0997	0–1,000	0.0000	1.9948	1.4124	1.9948	0.0000
	760.7024	0.2763	1,000–2,000	9.0000	5.5268	2.3509	2.1826	1.6284
	1,042.7440	0.3788	2,000–3,000	7.0000	7.5760	2.7524	0.0438	0.9240
	498.8171	0.1812	3,000–4,000	4.0000	3.6241	1.9037	0.0390	1.1037
	175.9457	0.0639	> 4,000	0.0000	1.2783	1.1306	1.2783	0.0000
Total	2,752.7675			20.0000				

Chi-Square	5.5385
Chi-Sq. Prob.	*0.2364*

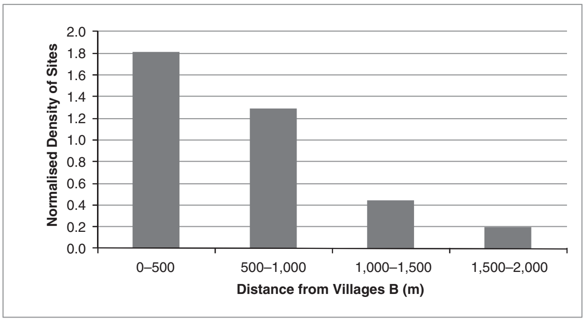
	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	274.5583	0.0997	0–1,000	0.0000	1.9948	1.4124	1.9948	0.0000
	2,302.2635	0.8363	1,000–4,000	20.0000	16.7269	4.0899	0.6405	1.1957
	175.9457	0.0639	> 4,000	0.0000	1.2783	1.1306	1.2783	0.0000
Total	2,752.7675			20.0000				

Chi-Square	3.9136
Chi-Sq. Prob.	*0.1413*

A18. Distribution of villages B according to distance from Latin cities, Archaic Age.

Distribution According to Linear Distance from Villages B (Fixed Buffer Zones of 500 m Each)

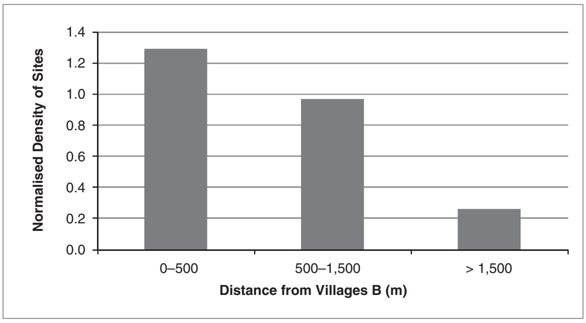
	No. of Sites	Area (m^2)	Area (ha)	Distance from Villages B (m)	Density of Villages (Sites/ha)	Land Fraction	Site Fraction	Distance from Villages B (m)	Normalised Density (Site Fraction/ Land Fraction)
	31.00000	6,532,037.0000	653.2037	0–500	0.0475	0.2374	0.4306	0–500	1.8140
	31.00000	9,212,385.0000	921.2385	500–1,000	0.0337	0.3348	0.4306	500–1,000	1.2862
	8.00000	6,938,399.0000	693.8399	1,000–1,500	0.0115	0.2521	0.1111	1,000–1,500	0.4407
	2.00000	3,846,117.0000	384.6117	1,500–2,000	0.0052	0.1398	0.0278	1,500–2,000	0.1988
Total	72.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Villages B (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	918.2701	0.3336	0–500	31.0000	24.0178	4.9008	2.0298
	1,051.1582	0.3819	500–1,000	31.0000	27.4936	5.2434	0.4472
	488.0065	0.1773	1,000–1,500	8.0000	12.7641	3.5727	1.7781
	229.7894	0.0835	1,500–2,000	2.0000	6.0103	2.4516	2.6758
	65.5433	0.0238	> 2,000	0.0000	1.7143	1.3093	1.7143
Total	2,752.7675			72.0000			
						Chi-Square	4.2551
						Chi-Sq. Prob.	*0.3726*

Distribution According to Reorganised Classes



Chi-Square Test

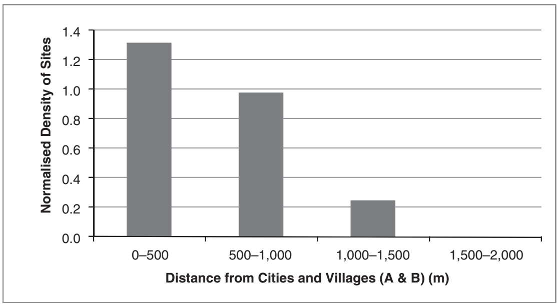
	Area (ha)	Area Fraction	Distance from Villages B (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	918.2701	0.3336	0–500	31.0000	24.0178	4.9008	2.0298	1.2907
	1,539.1647	0.5591	500–1,500	39.0000	40.2576	6.3449	0.0393	0.9688
	295.3327	0.1073	> 1,500	2.0000	7.7246	2.7793	4.2424	0.2589
Total	2,752.7675			72.0000				
						Chi-Square	6.3115	
						Chi-Sq. Prob.	**0.0426**	

	Area (ha)	Area Fraction	Distance from Villages B (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	2,457.4348	0.8927	0–1,500	72.0000	64.2754	8.0172	0.9283	1.1202
	295.3327	0.1073	> 1,500	0.0000	7.7246	2.7793	7.7246	0.0000
Total	2,752.7675			72.0000				
						Chi-Square	8.6529	
						Chi-Sq. Prob.	**0.0033**	

A19. Distribution of sites according to distance from villages B, Archaic Age.

Distribution According to Linear Distance from Cities and Villages (A & B) (Fixed Buffer Zones of 500 m each)

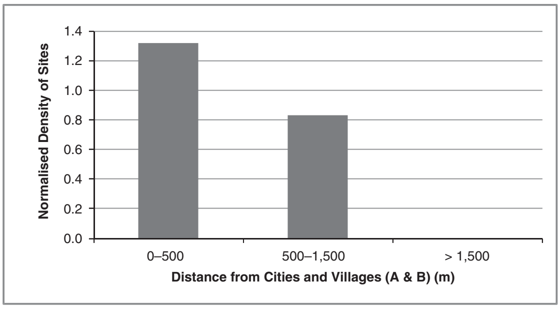
	No. of Sites	Area (m^2)	Area (ha)	Distance from Cities and Villages (A & B) (m)	Density of Villages (Sites/ha)	Land Fraction	Site Fraction	Distance from Cities and Villages (A &B) (m)	Normalised Density (Site Fraction/ Land Fraction)
	40.00000	1,162,9242.0000	1,162.9242	0–500	0.0344	0.4226	0.5556	0–500	1.3147
	30.00000	1,173,0451.0000	1,173.0451	500–1,000	0.0256	0.4263	0.4167	500–1,000	0.9775
	2.00000	3,060,843.0000	306.0843	1,000–1,500	0.0065	0.1112	0.0278	1,000–1,500	0.2497
	0.00000	1,067,700.0000	106.7700	1,500–2,000	0.0000	0.0388	0.0000	1,500–2,000	0.0000
	0.0000	39,440.0000	3.9440	2,000–2,500	0.0000	0.0014	0.0000	2,000–2,500	0.0000
Total	72.0000								



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Cities and Villages (A & B) (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	1,162.9242	0.4225	0–500	40.0000	30.4169	5.5151	3.0193
	1,173.0451	0.4261	500–1,000	30.0000	30.6816	5.5391	0.0151
	306.0843	0.1112	1,000–1,500	2.0000	8.0058	2.8294	4.5054
	110.7140	0.0402	> 1,500	0.0000	2.8958	1.7017	2.8958
Total	2,752.7676			72.0000			
						Chi-Square	7.5398
						Chi-Sq. Prob.	**0.0565**

Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Cities and Villages (A & B) (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	1,162.9242	0.4225	0–500	40.0000	30.4169	5.5151	3.0193	1.3151
	1,479.1294	0.5373	500–1,500	32.0000	38.6874	6.2199	1.1560	0.8271
	110.7140	0.0402	> 1,500	0.0000	2.8958	1.7017	2.8958	0.0000
Total	2,752.7676			72.0000				
						Chi-Square	7.0710	
						Chi-Sq. Prob.	**0.0291**	

	Area (ha)	Area Fraction	Distance from Cities and Villages (A & B) (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	2,642.0536	0.9598	0–1,500	72.0000	69.1042	8.3129	0.1213	1.0419
	110.7140	0.0402	> 1,500	0.0000	2.8958	1.7017	2.8958	0.0000
Total	2,752.7676			72.0000				
						Chi-Square	3.0171	
						Chi-Sq. Prob.	**0.0824**	

A20. Distribution of sites according to distance from cities and villages (A and B), Archaic Age.

Firstly, the number of sites for each distance class (*NSd*) was divided by the total number of sites (*TNS*) in order to calculate the normalised population (as a percentage). Then the area of each distance class (*Ad*) was normalised in relation to the total land included in the sample area (*TA*). The normalised population (from the first division) was divided by the normalised area of each distance class (the second division) in order to obtain the normalised density. Finally, the significance of the association between sites and land distance was verified by the chi-square goodness-of-fit test.

This analysis (Figs. A13–A20) showed that most villages B are between 0.5 and 1 km from villages A, and between 1 and 2 or 3 and 3.5 km from cities, while most generic settlements (houses/farmsteads, etc.) always lie a maximum of 1–1.5 km from higher-order centres. As can be seen from the calculations, when distance classes were rearranged in particular groups, the significance of the association (chi-square goodness-of-fit test) gave better results; these groups were found to be significant experimentally, by repeating calculations with different distance intervals (compare values in bold fonts, indicating a higher significance, with values in italics fonts, indicating lower significance).

A3. THE REGIONAL LEVEL (LATIUM VETUS): ANALYSES, CALCULATIONS AND STATISTICAL TEST (CF. CHAPTER 6, MAIN TEXT)

A3.1. SETTLEMENT PATTERNS AND ENVIRONMENTAL VARIABLES (SECTION 6.2, MAIN TEXT).

A3.1.1. Geology. As explained in more detail in the main text, catchment areas were defined for the settlements (buffer zones, or circles, of 2-km radius for Bronze Age sites and 5-km radius for Early Iron Age sites). Then the distribution of rock types within each buffer zone was calculated. This raw distribution was then normalized: the total area of land of each rock type was calculated as a percentage of the total area of land within the buffer zones (sum of all rock types). Finally, the normalised distribution was normalised in relation to the distribution of rock types within the whole territory of Latium vetus. As shown in the text the calculation of normalised distribution highlighted associations which would otherwise have been overlooked (see Figs. A21 and A22).

A3.1.2. Elevation. The location of sites in relation to elevation was analysed in two steps. Firstly, the elevation of sites was calculated; then the association of sites with different elevations was considered.

The mean elevation of sites was calculated considering settlements as 'polygons' and measuring the mean height of the whole surface occupied by the settlement. Then the standard deviation was calculated and ranges of upper and lower variability for the mean height were defined (Fig. A23). The graph shows that the trend is confirmed, even given the significant variability of height

Rock Type Distribution in Latium Vetus

Rock Types	Area (m^2)	Area (ha)	Rock Types	Area (% of Total Regional Area)
Class 0	9,990,928.2496	999.092825	**Class 0**	0.003473297
Class A	18,228,948.8088	1,822.894881	**Class A**	0.006337204
Class B	583,692,585.5156	58,369.25855	**Class B**	0.202917839
Class C	51,586,096.7811	5,158.609678	**Class C**	0.017933651
Class D1	4,840,681.6781	484.0681678	**Class D1**	0.001682839
Class D2	539,163,154.7434	53,916.31547	**Class D2**	0.187437402
Class D3	48007897.7103	4,800.789771	**Class D3**	0.016689708
Class E	17,772,569.6328	1,777.256963	**Class E**	0.006178546
Class G	99,354,661.7091	9,935.466171	**Class G**	0.034540156
Class H	3,905,171.0911	390.5171091	**Class H**	0.001357613
Class I	20,912,440.2223	2,091.244022	**Class I**	0.007270106
Class L	8,895,902.7939	889.5902794	**Class L**	0.003092617
Class M	36,117,632.9572	3,611.763296	**Class M**	0.012556116
Class N	76,130,606.8082	7,613.060681	**Class N**	0.026466429
Class Q	913,271,654.3557	91,327.16544	**Class Q**	0.317494371
Class R	51,840,094.9250	5,184.009493	**Class R**	0.018021952
Class S1	155,571,769.5877	15,557.17696	**Class S1**	0.054083756
Class S2	237,214,357.8780	23,721.43579	**Class S2**	0.082466398
Total	2,876,497,155.4479	287,649.7155		

Rock Type Distribution in Buffer Zones (2 km for Bronze Age Sites and 5 km for Early Iron Age Sites)

Rock Types	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
Class 0	10,672,473.5424	13,206,108.5460	20,226,245.7657	19,454,821.6959	25,432,033.1285	25,432,032.8743
Class A	3,739,836.3408	5,283,091.6745	9,024,817.3459	9,334,951.6775	9,898,455.2465	10,042,823.7031
Class B	161,957,628.2783	135,323,248.8588	164,434,125.9426	100,733,420.7540	103,591,846.3827	144,220,728.3024
Class C	20,381,281.7214	16,419,548.8427	11,165,702.4980	3,180,402.4334	6,330,639.4769	6,421,673.9298
Class D1	435,669.2788	753,258.3562	1,815,898.3901	878,985.6753	867,117.0353	665,850.4066
Class D2	72,400,249.5813	52,837,906.9278	135,881,378.5414	75,534,850.7622	61,455,330.0680	63,452,591.7404
Class D3	2,499,744.0979	6,192,643.4530	8,181,589.1866	2,488,659.5906	1,240,303.2579	1,548,746.6663
Class E	45,233,623.7733	41,723,780.7638	16,639,378.6989	7,407,033.9013	11,138,641.4919	11,918,059.9727
Class G	5,352,941.6118	8,969,552.5716	17,775,796.8833	9,335,274.8486	10,792,894.3361	10,792,894.2819
Class H						
Class I	1,168,218.7260	7,062,338.0996	12,112,395.8105	9,044,915.9058	9,044,915.9058	9,044,915.8245
Class L	2,704,288.7925	2,693,707.3024	2,871,446.1831	3,005,197.1342	3,005,197.1342	3,005,197.1350
Class M	10,190,994.8556	16,088,060.4928	18,304,388.6082	21,029,702.5027	21,029,702.5027	21,029,702.3588
Class N	9,032,009.1336	8,882,846.1084	14,075,852.3706	13,889,212.7386	13,889,212.7386	13,891,641.5339
Class Q	206,099,835.3427	205,041,129.2644	314,368,705.3647	282,892,639.9521	334,712,546.9750	348,269,784.4174
Class R	10,149,885.2058	8,635,933.3905	13,640,712.1532	14,626,872.2303	15,401,637.1565	16,678,655.4708
Class S1	83,109,944.7218	62,327,286.5193	58,912,584.9900	35,599,463.0864	46,634,603.8121	55,798,880.7276
Class S2	162,687,365.1546	81,272,299.7719	77,764,271.7114	66,524,818.3019	68,979,562.5639	80,414,778.9357
Total	807,815,990.1586	672,712,740.9437	897,195,290.4442	674,961,223.1908	743,444,639.2126	822,628,958.2812

Normalised Rock Type Distribution in Buffer Zones (2 km for Bronze Age Sites and 5 km for Early Iron Age Sites)

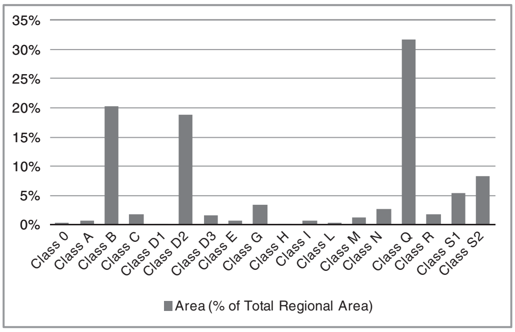
Rock Types	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
Class 0	0.013211516	0.019631126	0.022543861	0.028823614	0.034208375	0.030915558
Class A	0.004629565	0.007853414	0.010058922	0.013830353	0.013314314	0.012208206
Class B	0.200488267	0.201160526	0.183275735	0.149243271	0.139340364	0.175316863
Class C	0.025230104	0.024407965	0.012445119	0.004711978	0.00851528	0.007806282
Class D1	0.000539317	0.001119733	0.002023972	0.001302276	0.001166351	0.000809418
Class D2	0.08962468	0.078544531	0.151451284	0.111909912	0.082662954	0.077133915
Class D3	0.003094447	0.00920548	0.009119073	0.003687115	0.00166832	0.001882679
Class E	0.05599496	0.062023176	0.018545994	0.010974014	0.014982476	0.014487771
Class G	0.006626437	0.013333407	0.019812628	0.013830831	0.014517415	0.013120003
Class H	0	0	0	0	0	0
Class I	0.001446145	0.010498297	0.013500289	0.013400645	0.012166227	0.010995134
Class L	0.003347654	0.004004246	0.00320047	0.0044524	0.004042261	0.003653162
Class M	0.01261549	0.023915201	0.020401789	0.031156905	0.028286844	0.025564019
Class N	0.011180775	0.013204516	0.015688727	0.020577794	0.018682242	0.016886886
Class Q	0.255132156	0.304797452	0.350390499	0.419124285	0.450218522	0.423361931
Class R	0.012564601	0.012837476	0.015203727	0.021670685	0.020716589	0.020274822
Class S1	0.102882272	0.092650671	0.065663056	0.052742975	0.062727742	0.06782995
Class S2	0.201391613	0.120812785	0.086674855	0.098560948	0.092783724	0.097753402

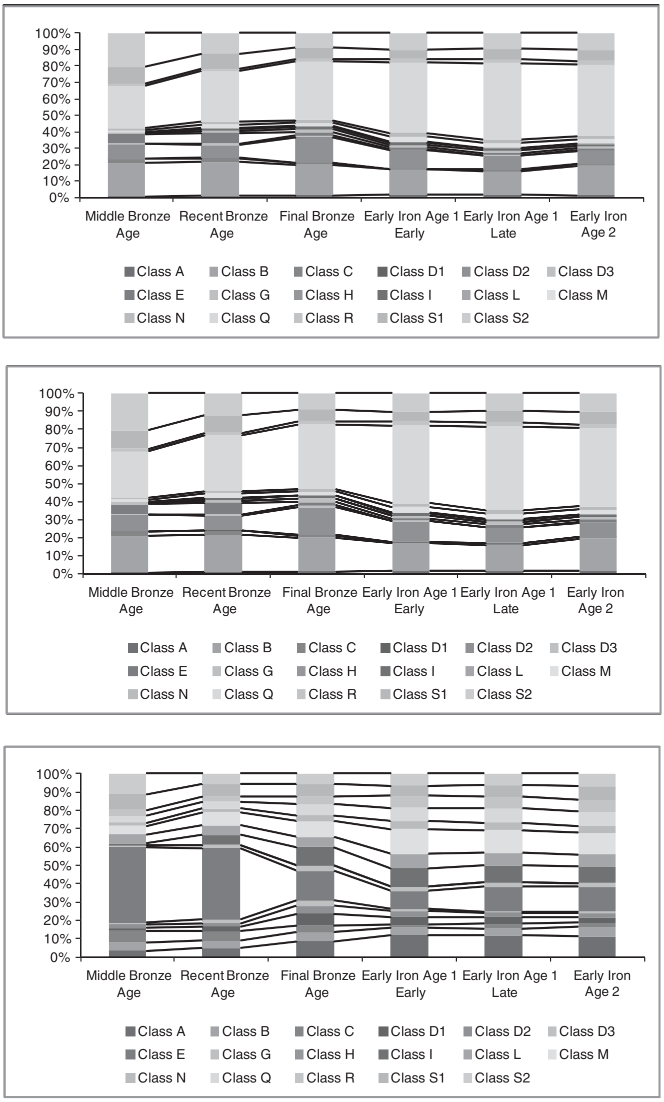
Normalised Rock Type Distribution in Buffer Zones in Relation to Normalised Rock Types in Region

Rock Types	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
Class 0	3.803739357	5.652015163	6.490623287	8.298632652	9.848964118	8.900926023
Class A	0.730537435	1.239255392	1.587280786	2.182406139	2.100976106	1.926434152
Class B	0.988026823	0.991339783	0.903201689	0.735486205	0.686683658	0.86397955
Class C	1.406858202	1.361014798	0.693953463	0.262745045	0.474821338	0.435286839
Class D1	0.320480726	0.665383044	1.202712938	0.773856436	0.693085014	0.480983413
Class D2	0.478157928	0.419044066	0.808009938	0.59705219	0.441016323	0.411518264
Class D3	0.185410518	0.551566249	0.546388996	0.220921475	0.099960981	0.112804819
Class E	9.062805519	10.03847464	3.001676224	1.776148337	2.424919446	2.344851249
Class G	0.191847331	0.38602624	0.573611426	0.400427583	0.420305421	0.379847812
Class H	0	0	0	0	0	0
Class I	0.198916567	1.444036225	1.856958959	1.843252988	1.673459227	1.512375984
Class L	1.082466695	1.294776089	1.034874334	1.439686934	1.30706821	1.181252914
Class M	1.004728694	1.90466546	1.624848639	2.481412551	2.252833852	2.035981377
Class N	0.422451231	0.498915668	0.592778407	0.77750549	0.705884512	0.638049293
Class Q	0.803580094	0.960008995	1.103611689	1.320099893	1.418036236	1.333447047
Class R	0.697183091	0.712324352	0.843622628	1.202460462	1.149519689	1.125006949
Class S1	1.902276773	1.71309609	1.214099419	0.975209183	1.159825931	1.254164926
Class S2	2.442105135	1.464994091	1.051032392	1.195164957	1.125109466	1.185372522

A21. Latium vetus: association between sites and geology.

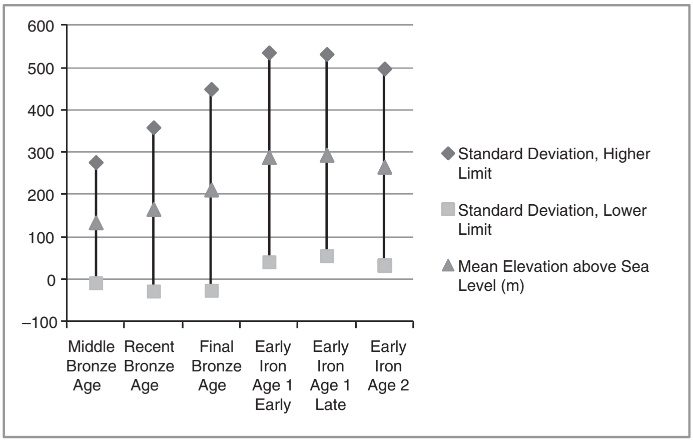
Rock Types	Definition
Class 0	Vatican City (Not Classified)
Class A	Organic Soils
Class B	Alluvial and Colluvial Soils
Class C	Travertine
Class D1	Gravel Deposits
Class D2	Sands Deposits
Class D3	Coastal, Lake and Dune Sands
Class E	Clay Deposits
Class G	Polygenic Conglomerates
Class H	Calcarenitic, Organic or Clay-Limestone and Marls
Class I	*Scaglia*' Formations (Marly Limestone)
Class L	Marls, Calcareous Marls and Dolomitic Limestone
Class M	Majolica, Marly and Selciferous Limestone
Class N	Cavernous Limestone
Class Q	Volcanic *Scoria*, *Lapilli* and *Pozzolana*
Class R	Volcanic Rock
Class S1	Lithoid Tuff
Class S2	Stratifed Tuff, *Tufiti* and Tuff Soils





A22. Latium vetus: association between sites and geology, graphs.

	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
Standard Deviation, Higher Limit	277.055	359.2676	449.9583	536.1395	532.53	498.23
Standard Deviation, Lower Limit	–8.19618	–27.6426	–25.7922	41.32331	55.648	33.731
Mean Elevation above Sea Level (m)	134.4294	165.8125	212.083	288.7314	294.09	265.98



A23. Latium vetus: association between sites and elevation. Mean elevation and standard deviations (all sites considered).

values. The association of sites with classes of elevation – plain (0–75 m above sea level), hill (between 75 and 800 m above sea level) and mountain (more than 800 m above sea level) – was analysed according the same procedure used at the territorial level. Populations (number of sites) and areas for each class were normalised (calculated as a percentage), and then normalised densities (normalised populations / normalised areas) were calculated. Finally, the association between sites and different classes was tested with the chi-square goodness-of-fit test. The calculations are presented in Figures A24–A25.

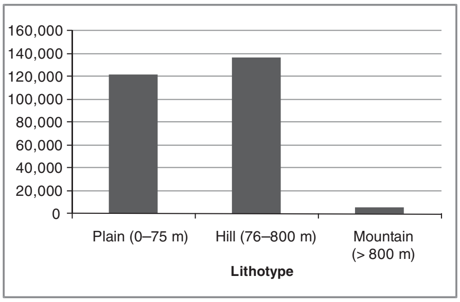
A3.1.3. Slope. The association of sites with land slope was analysed with the same catchment area method as that applied to the association of sites with geological variables. As usual, catchment areas of 2-km radius for Bronze Age sites and 5-km radius for Early Iron Age sites were used. Then the distribution of slope classes within the buffer zones was calculated. This raw distribution was normalised: the total land of each class was calculated as a percentage of the total land in the buffer zones (sum of all classes). Then the normalised distribution was normalised again in relation to the distribution of land according to slope within the whole territory of Latium vetus (Figs. A26–A27). Finally, the variation in the distribution of land of different classes between each temporal phase and the following was calculated (see Fig. A28).

Populations in Different Areas

	Area (ha)	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
	121,778	Plain (0–75 m)	33	30	34	17	17	21
	136879	Hill (76–800 m)	32	24	37	46	41	43
	5,258	Mountain (> 800 m)			3	3	3	3
Total	**263,915**		**65**	**54**	**74**	**66**	**61**	**67**

Land Distribution According to Elevation

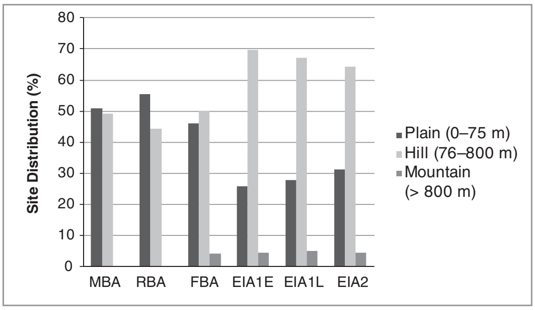
Class	Area (ha)
Plain (0–75 m)	121,778.0088
Hill (76–800 m)	136,879.2829
Mountain (> 800 m)	5,258.1915



Normalised Populations and Areas

Area frac	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0.4614	Plain (0–75 m)	51%	56%	46%	26%	28%	31%
0.5186	Hill (76–800 m)	49%	44%	50%	70%	67%	64%
0.0199	Mountain (> 800 m)	0%	0%	4%	5%	5%	4%

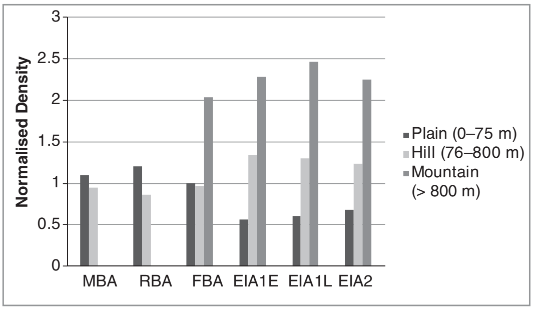
Elevation Classes: Normalised Populations



Normalised Densities

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0-75 m)	1.10	1.20	1.00	0.56	0.60	0.68
Hill (76-800 m)	0.95	0.86	0.96	1.34	1.30	1.24
Mountain (> 800 m)	0.00	0.00	2.03	2.28	2.47	2.25

Elevation Classes: Normalised Densities



A24. Latium vetus: association between sites and elevation.

Association between Sites and Elevation, Chi-Square Test

Population in Different Areas

	Area (ha)	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
	12,1778	Plain (0–75 m)	33	30	34	17	17	21
	136,879	Hill (76–800 m)	32	24	37	46	41	43
	5,258	Mountain (> 800 m)			3	3	3	3
Total	263,915		65	54	74	66	61	67

Normalised Areas and Populations

Area frac	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0.46143	Plain (0–75 m)	0.51	0.46	0.52	0.26	0.26	0.32
0.51865	Hill (76–800 m)	0.49	0.37	0.57	0.71	0.63	0.66
0.01992	Mountain (>800 m)	0.00	0.00	0.05	0.05	0.05	0.05

Normalised Density

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0–75 m)	1.10	1.00	1.13	0.57	0.57	0.70
Hill (76–800 m)	0.95	0.71	1.10	1.36	1.22	1.28
Mountain (> 800 m)	0.00	0.00	2.32	2.32	2.32	2.32

Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0–75 m)	29.99	24.92	34.15	30.45	28.15	30.92
Hill (76–800 m)	33.71	28.01	38.38	34.23	31.64	34.75
Mountain (> 800 m)	1.30	1.08	1.47	1.31	1.22	1.33

Expected Standard Deviations

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0–75 m)	5.48	4.99	5.84	5.52	5.31	5.56
Hill (76–800 m)	5.81	5.29	6.20	5.85	5.62	5.89
Mountain (> 800 m)	1.14	1.04	1.21	1.15	1.10	1.16

Chi-Square

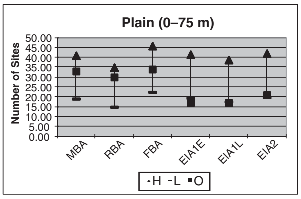
Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0–75 m)	0.30	1.04	0.00	5.94	4.41	3.18
Hill (76–800 m)	0.09	0.57	0.05	4.05	2.77	1.96
Mountain (> 800 m)	1.30	1.08	1.58	2.16	2.62	2.08
Chi-Square	**1.68**	**2.69**	**1.63**	**12.15**	**9.81**	**7.22**
Chi-Sq. Prob.	*0.43170*	*0.26050*	*0.44260*	**0.00230**	**0.00740**	**0.02710**

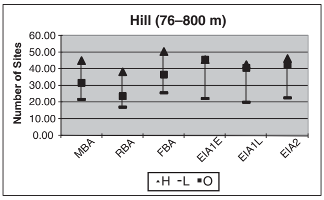
Lower Error Range Values of Expected Mean Value Variances

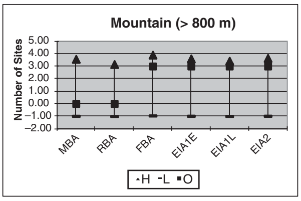
Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0–75 m)	19.04	14.93	22.46	19.42	17.54	19.80
Hill (76–800 m)	22.10	17.42	25.99	22.53	20.39	22.96
Mountain (> 800 m)	-0.98	-1.00	-0.95	-0.98	-0.99	-0.98

Higher Error Range Values of Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
Plain (0–75 m)	40.95	34.90	45.83	41.49	38.76	42.04
Hill (76–800 m)	45.32	38.59	50.77	45.93	42.89	46.54
Mountain (> 800m)	3.57	3.15	3.90	3.61	3.42	3.65







H = Higher error range values of expected mean value variances
L = Lower error range values of expected mean value variances
O = Observed value variances

(1) If probability is smaller than .05 then the random hypothesis can be rejected.
(2) To compute the chi-square probability the calculator on http://faculty.vassar.edu/lowry/tabs.html?#csq was used.
(3) The degree of freedom to calculate the chi-square probability is the number of classes decreased by 1 because the sample is a determined finite number.

A25. Latium vetus: associate between sites and elevation, chi-square test.

Land Distribution According to Slope (%) in Latium Vetus

Slope (%)	Area (m^2)	Area (ha)	Slope (%)	Normalised Slope Classes
0–5	1,602,638,751	160,264	0–5	0.58
6–10	472,675,363	47,268	6–10	0.17
11–15	258,265,176	25,827	11–15	0.09
16–40	444,099,689	44,410	16–40	0.16
Total	2,777,678,979	277,768		

Land Distribution According to Slope (%) in Buffer Zones
(2 km for Bronze Age Sites and 5 km for Early Iron Age Sites)

Slope (%)	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
0–5	364,248,352	327,806,768	440,159,772	273,173,644	271,414,146	316,591,971
6–10	179,244,884	125,982,409	165,285,714	144,486,715	167,083,767	182,958,109
11–15	106,579,290	76,434,779	101,332,136	88,893,209	104,816,366	112,670,518
16–40	144,940,309	125,557,964	179,414,116	158,877,762	179,683,429	186,083,882
Total	795,012,834	655,781,919	886,191,739	665,431,330	722,997,708	798,304,480

Normalised Land Distribution According to Slope (%) in Buffer Zones
(2 km for Bronze Age Sites and 5 km for Early Iron Age Sites)

Slope (%)	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
0–5	0.46	0.50	0.50	0.41	0.38	0.40
6–10	0.23	0.19	0.19	0.22	0.23	0.23
11–15	0.13	0.12	0.11	0.13	0.14	0.14
16–40	0.18	0.19	0.20	0.24	0.25	0.23

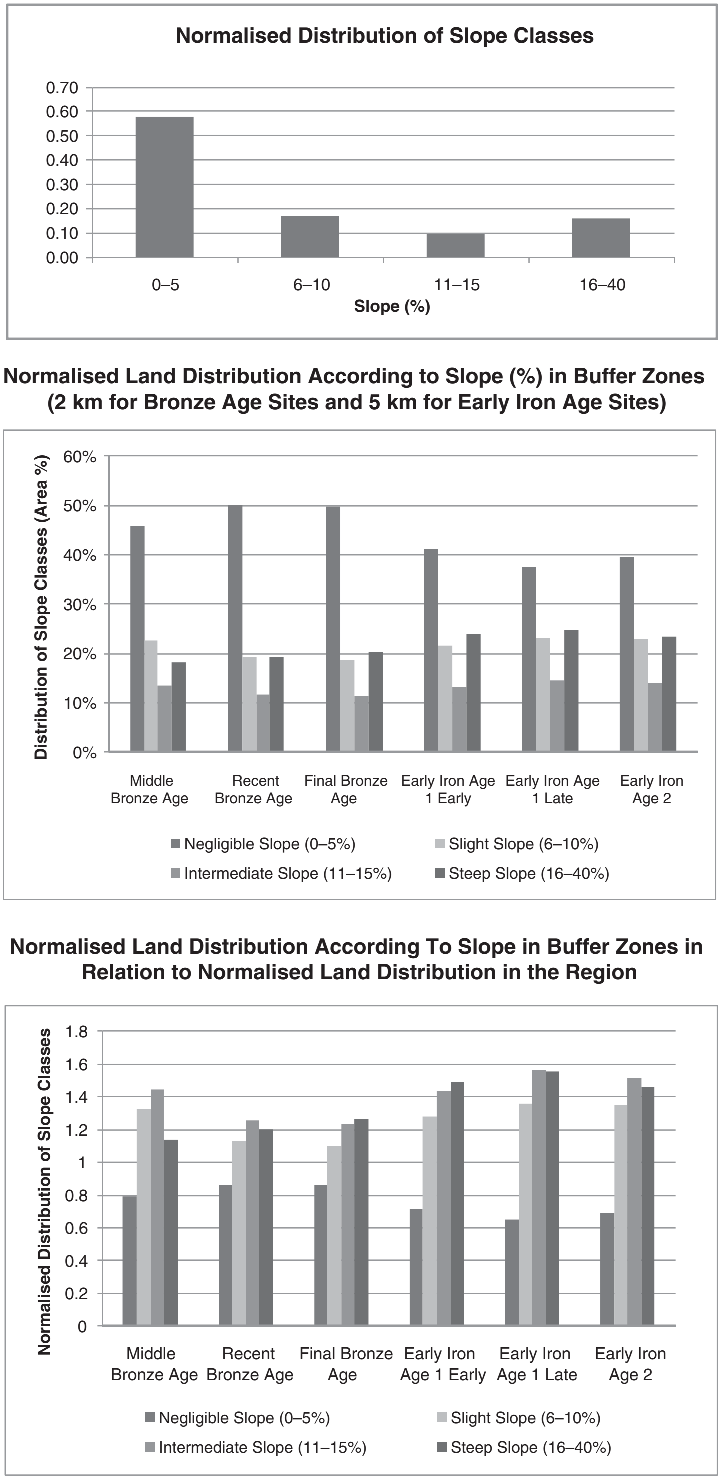
Normalised Land Distribution According to Slope in Buffer Zones
in Relation to Normalised Land Distribution in the Region

Slope (%)	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
0–5	0.79	0.87	0.86	0.71	0.65	0.69
6–10	1.32	1.13	1.10	1.28	1.36	1.35
11–15	1.44	1.25	1.23	1.44	1.56	1.52
16–40	1.14	1.20	1.27	1.49	1.55	1.46

A26. Latium vetus: association between sites and slope.

A3.1.4. Distance from Modern Rivers. To analyse the association of sites with distance from modern rivers the catchment area method was again applied. Firstly, land within the regions was classified according to walking distance from rivers: 1.5 hours, 3 hours and more than 3 hours. Then, as usual, catchment areas of 2-km radius for Bronze Age sites and 5-km radius for Early Iron Age sites were used. Finally, the distribution of different land classes, defined according to walking distance from rivers, within the buffer zones was calculated.

The association between sites and modern rivers was further investigated by differentiating between modern rivers associated with alluvial deposits (B1) and those not associated with alluvial deposits (B2). It is assumed that rivers associated with alluvial deposits are more likely to have been perennial rivers



Normalised Distribution of Slope Classes

Normalised Land Distribution According to Slope (%) in Buffer Zones (2 km for Bronze Age Sites and 5 km for Early Iron Age Sites)

Normalised Land Distribution According To Slope in Buffer Zones in Relation to Normalised Land Distribution in the Region

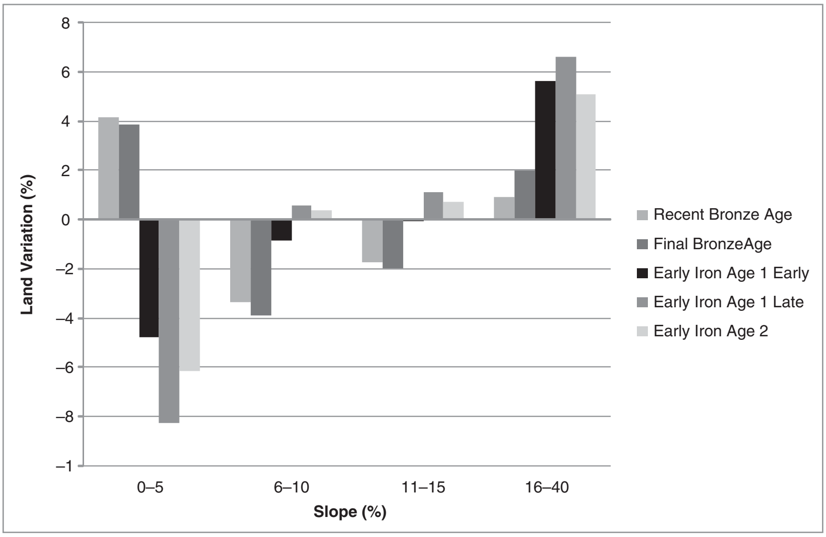
A27. Latium vetus: association between sites and slope, graphs.

Distribution of Land According to Slope in Buffer Zones

Slope (%)	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
0–5	46%5	0%	50%4	1%	38%4	0%
6–10	23%1	9%	19%2	2%	23%2	3%
11–15	13%1	2%	11%1	3%	14%1	4%
16–40	18%1	9%	20%2	4%	25%2	3%

Variation of the Distribution of Land Between Each Phase and the Following According to Slope in Buffer Zones

Slope (%)	Middle Bronze Age	Recent Bronze Age	Final Bronze Age	Early Iron Age 1 Early	Early Iron Age 1 Late	Early Iron Age 2
0–5		4%	–4%	–5%	–8%	–6%
6–10		–3%	–4%	–1%	1%	0%
11–15		–2%	–2%	0%	1%	1%
16–40		1%	–2%	6%	7%	5%



A28. Latium vetus: variation between sites and slope.

in antiquity as well and therefore to have been important for middle- and long-distance communication.[23]

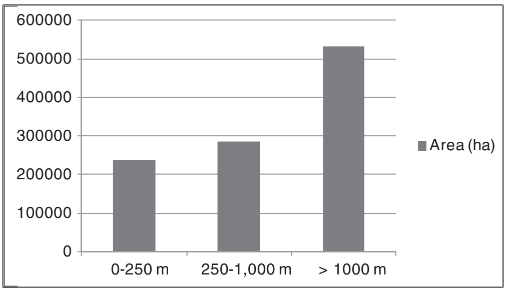
Linear distances from rivers were calculated and divided into three classes (0–250 m, 250–1,000 m and more than 1,000 m). Then the distribution or density of sites for each class (percentage) was calculated. In addition, normalised densities were calculated. For this purpose, populations (number of sites) and areas for each class were normalised (calculated as a percentage), and then normalised densities (normalised populations / normalised areas) were calculated. Finally, the association between sites and different classes was tested with the chi-square goodness-of-fit test. The calculations are presented in Figures A29–A32.

Populations in Different Areas

	Area (ha)	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
	237,489	0-250 m	20	19	15	6	8	9
	286,979	250-1,000 m	25	20	20	18	17	22
	531,513	< 1,000 m	20	15	39	32	36	36
Total	**1,055,982**		**65**	**54**	**74**	**56**	**61**	**67**

Land Distribution According to Distance from Rivers B1

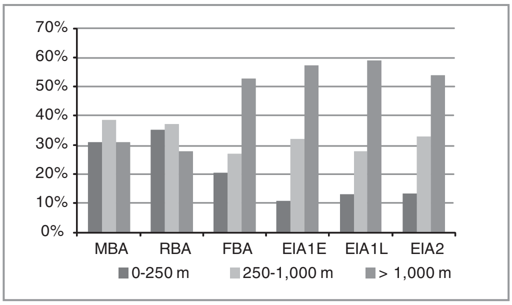
Class	Area (ha)
0-250 m	237,489
250-1,000 m	286,979
> 1,000 m	531,513



Normalised Populations and Areas

Area frac	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0.2249	0-250 m	31%	35%	20%	11%	13%	13%
0.2718	250-1000 m	38%	37%	27%	32%	28%	33%
0.5033	1000 < m	31%	28%	53%	57%	59%	54%

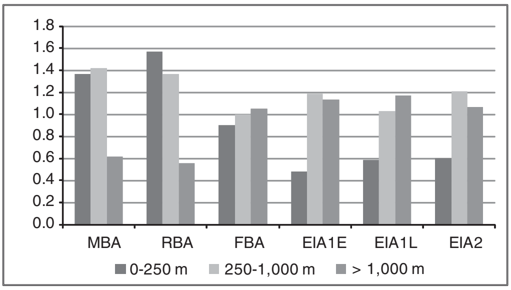
Normalised Populations



Normalised Densities

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	1.3681	1.5645	0.9013	0.4764	0.5831	0.5973
250-1,000 m	1.4153	1.3628	0.9945	1.1827	1.0255	1.2082
< 1,000 m	0.6113	0.5519	1.0471	1.1353	1.1725	1.0675

Normalised Densities



A29. Latium vetus: association between sites and distance from modern rivers B1.

Population in Different Areas

	Area (ha)	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
	237,489	0-250 m	20	19	15	6	8	9
	286,979	250-1000 m	25	20	20	18	17	22
	531,513	> 1,000 m	20	15	39	32	36	36
Total	1,055,982		65	54	74	56	61	67

Normalised Areas and Populations

Area frac	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0.22	0-250 m	0.31	0.29	0.23	0.09	0.12	0.14
0.27	250-1000 m	0.38	0.31	0.31	0.28	0.26	0.34
0.50	> 1,000 m	0.31	0.23	0.60	0.49	0.55	0.55

Normalised Density

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	1.37	1.30	1.03	0.41	0.55	0.62
250-1000 m	1.42	1.13	1.13	1.02	0.96	1.25
> 1,000 m	0.61	0.46	1.19	0.98	1.10	1.10

Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	14.62	12.14	16.64	12.59	13.72	15.07
250-1000 m	17.66	14.68	20.11	15.22	16.58	18.21
> 1,000 m	32.72	27.18	37.25	28.19	30.70	33.72

Expected Standard Deviations

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	3.82	3.48	4.08	3.55	3.70	3.88
250-1000 m	4.20	3.83	4.48	3.90	4.07	4.27
> 1,000 m	5.72	5.21	6.10	5.31	5.54	5.81

Chi-Square

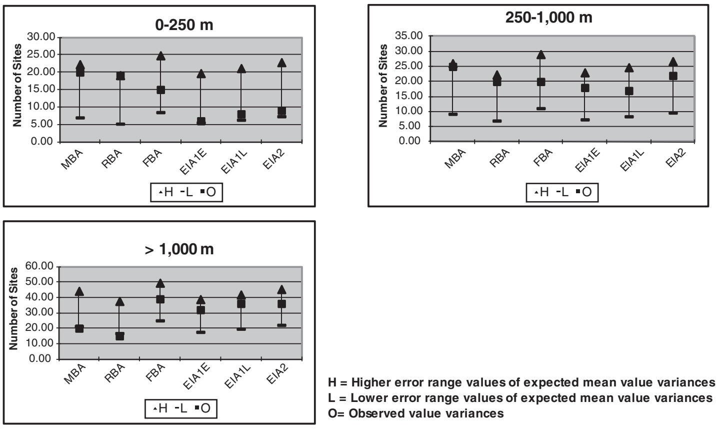
Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	1.98	3.87	0.16	3.45	2.38	2.44
250-1000 m	3.05	1.93	0.00	0.51	0.01	0.79
> 1,000 m	4.94	5.46	0.08	0.52	0.91	0.15
Chi-Square	**9.97**	**11.26**	**0.25**	**4.48**	**3.31**	**3.39**
Chi-Sq. Prob	**0.0068**	**0.0036**	*0.8825*	*0.1065*	*0.1911*	*0.1836*

Lower Error Range Values of Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	6.97	5.17	8.48	5.50	6.31	7.30
250-1000 m	9.26	7.01	11.14	7.42	8.43	9.67
>1,000 m	21.28	16.75	25.04	17.57	19.62	22.11

Higher Error Range Values of Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	22.27	19.11	24.80	19.69	21.13	22.83
250-1000 m	26.07	22.34	29.08	23.02	24.72	26.74
> 1,000 m	44.16	37.61	49.45	38.81	41.79	45.34



H = Higher error range values of expected mean value variances
L = Lower error range values of expected mean value variances
O= Observed value variances

(1) If the chi-square probability is smaller than .05 then the random hypothesis can be rejected.
(2) To compute the chi-square probability the calculator on http://faculty.vassar.edu/lowry/tabs.html?#csq was used.
(3) The degree of freedom to calculate the chi-square probability is the number of classes decreased by 1 because the sample is a determined finite number.

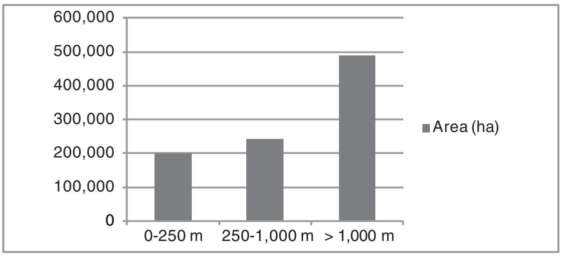
A30. Latium vetus: association between sites and distance from modern rivers B1, chi-square test.

Populations in Different Areas

	Area (ha)	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
	201,178	0–250 m	9	7	11	5	5	7
	243,780	250–1000 m	12	13	19	16	18	17
	489,727	> 1,000 m	44	34	44	35	38	35
Total	**934,686**		**65**	**54**	**74**	**56**	**61**	**59**

Land Distribution According to Distance from Rivers B2

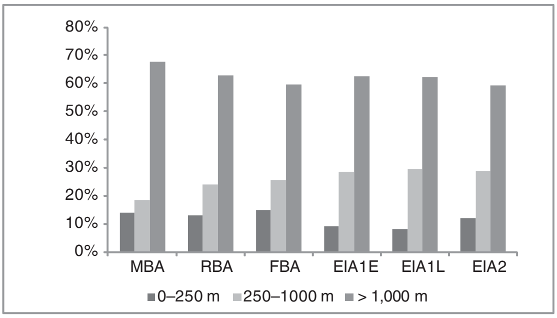
Class	Area (ha)
0–250 m	201,178
250–1000 m	243,780
> 1,000 m	489,727



Normalised Populations and Areas

Area frac	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0.22	0–250 m	14%	13%	15%	9%	8%	12%
0.26	250–1000 m	18%	24%	26%	29%	30%	29%
0.52	> 1,000 m	68%	63%	59%	63%	62%	59%

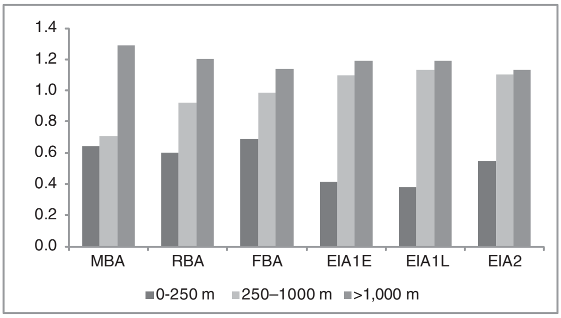
Normalised Populations



Normalised Densities

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0-250 m	0.64	0.60	0.69	0.41	0.38	0.55
250-1000 m	0.71	0.92	0.98	1.10	1.13	1.10
> 1,000 m	1.29	1.20	1.13	1.19	1.19	1.13

Normalised Densities



A31. Latium vetus: association between sites and distance from modern rivers B2.

Population in Different Areas

	Area (ha)	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
	201,178	0–250 m	9	7	11	5	5	7
	243,780	250–1,000 m	12	13	19	16	18	17
	489,727	> 1,000 m	44	34	44	35	38	35
Total	934,686		65	54	74	56	61	59

Normalised Areas and Populations

Area frac	Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0.22	0–250 m	0.14	0.11	0.17	0.08	0.08	0.11
0.26	250–1,000 m	0.18	0.20	0.29	0.25	0.28	0.26
0.52	> 1,000 m	0.68	0.52	0.68	0.54	0.58	0.54

Normalised Density

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0–250 m	0.64	0.50	0.79	0.36	0.36	0.50
250–1,000 m	0.71	0.77	1.12	0.94	1.06	1.00
> 1,000 m	1.29	1.00	1.29	1.03	1.12	1.03

Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0–250 m	13.99	11.62	15.93	12.05	13.13	12.70
250–1,000 m	16.95	14.08	19.30	14.61	15.91	15.39
> 1,000 m	34.06	28.29	38.77	29.34	31.96	30.91

Expected Standard Deviations

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0–250 m	3.74	3.41	3.99	3.47	3.62	3.56
250–1,000 m	4.12	3.75	4.39	3.82	3.99	3.92
> 1,000 m	5.84	5.32	6.23	5.42	5.65	5.56

Chi–Square

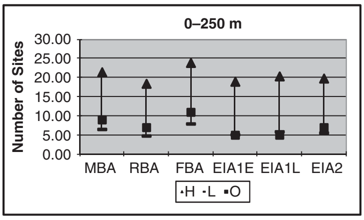
Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0–250 m	1.78	1.84	1.52	4.13	5.03	2.56
250–1,000 m	1.45	0.08	0.00	0.13	0.27	0.17
> 1,000 m	2.90	1.15	0.70	1.09	1.14	0.54
Chi–Square	**6.13**	**3.07**	**2.23**	**5.35**	**6.45**	**3.27**
Chi–Sq. Prob.	**0.0467**	*0.2155*	*0.3279*	**0.0689**	**0.0398**	*0.1950*

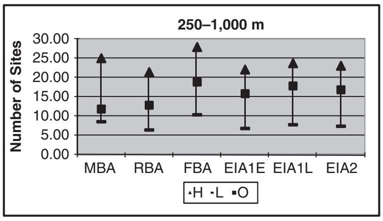
Lower Error Range Values of Expected Mean Value Variances

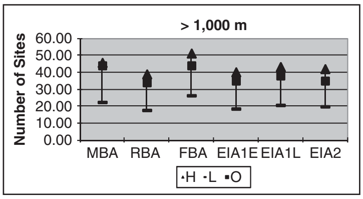
Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0–250 m	6.51	4.80	7.95	5.11	5.88	5.57
250–1,000 m	8.72	6.58	10.51	6.96	7.93	7.54
> 1,000 m	22.39	17.65	26.32	18.51	20.65	19.79

Higher Error Range Values of Expected Mean Value Variances

Class	MBA	RBA	FBA	EIA1E	EIA1L	EIA2
0–250 m	21.47	18.44	23.91	19.00	20.38	19.83
250–1,000 m	25.19	21.59	28.09	22.25	23.89	23.23
> 1,000 m	45.73	38.93	51.23	40.17	43.27	42.03





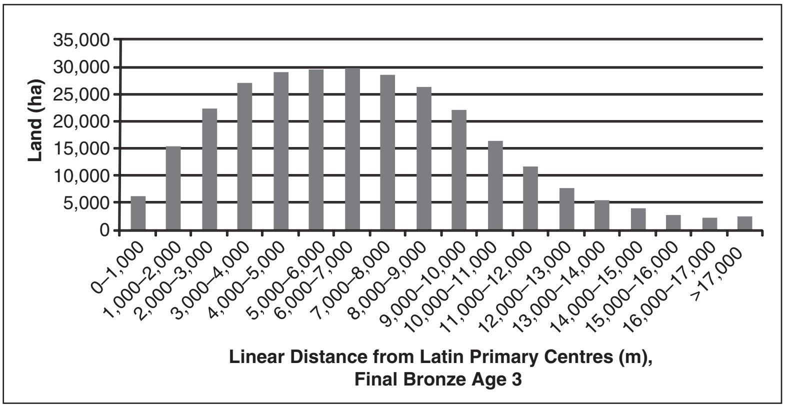


H = Higher error range values of expected mean value variances
L = Lower error range values of expected mean value variances
O= Observed value variances

(1) If the chi-square probability is smaller than .05 then the random hypothesis can be rejected.
(2) To compute the chi-square probability the calculator on http://faculty.vassar.edu/lowry/tabs.html?#csq was used.
(3) The degree of freedom to calculate the chi-square probability is the number of classes decreased by 1 because the sample is a determined finite number.

A32. Latium vetus: association between sites and distance from modern rivers B2, chi-square test.

	Class	Distance from Latin Primary Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	6,272.9756	62,729,756
	2	1,000–2,000	15,446.0701	154,460,701
	3	2,000–3,000	22,384.9142	223,849,142
	4	3,000–4,000	26,986.0916	269,860,916
	5	4,000–5,000	29.101.0414	291,010,414
	6	5,000–6,000	29.619.0779	296,190,779
	7	6,000–7,000	29.687.2746	296,872,746
	8	7,000–8,000	28.424.7216	284,247,216
	9	8,000–9,000	26,241.0596	262,410,596
	10	9,000–10,000	22,169.0128	221,690,128
	11	10,000–11,000	16,435.4865	164,354,865
	12	11,000–12,000	11,588.1532	115,881,532
	13	12,000–13,000	7,761.8147	77,618,147
	14	13,000–14,000	5,484.4337	54,844,337
	15	14,000–15,000	4,053.6486	40,536,486
	16	15,000–16,000	2,803.2134	28,032,134
	17	16,000–17,000	2,334.7305	23,347,305
	18	> 17,000	2,517.3284	25,173,284
Total			289,311.0484	2,893,110,484



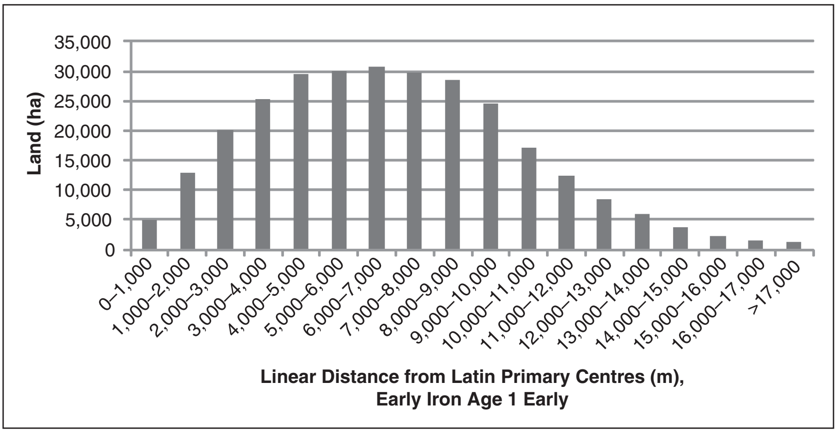
A33. Land distribution according to distance from primary centres, Final Bronze Age 3.

A3.2. SITE DISTRIBUTION AND HIERARCHICAL LEVELS: REGIONAL SAMPLE (SECTION 5.4, MAIN TEXT)

In order to analyse the spatial location of settlements in relation to their hierarchical level at the regional scale, the same methodology was followed as described in Section A2.2 of this appendix for the territorial level. By means of GIS tools, a continuous surface, measuring the linear distance from settlements, was calculated (GRID). Then this continuous surface was reclassified using buffer zones of 1 km each. Finally, the GRID was converted to a vector surface (polygon-shape file) in order to measure the association of sites with each buffer zone.[24]

As for the territorial level, land distribution, according to the distance from centres of different hierarchical levels, was calculated to detect any regularity in the spatial location of settlements. For the Final Bronze Age, land distribution was calculated only in relation to primary centres, larger than

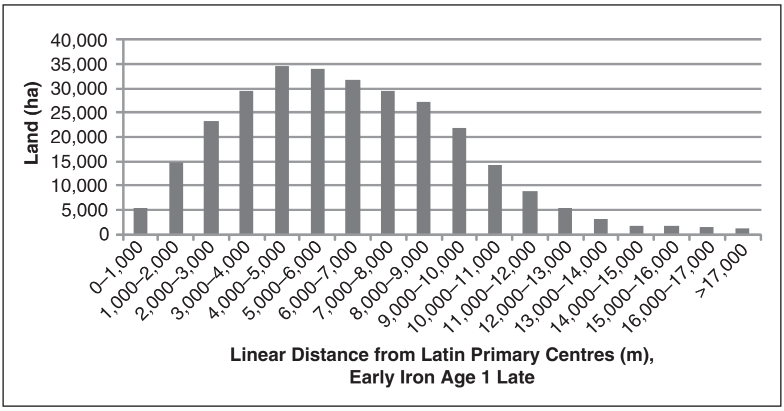
	Class	Distance from Latin Primary Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	4,874.0284	4,8740,284
	2	1,000–2,000	13,006.1010	130,061,010
	3	2,000–3,000	20,091.7168	200,917,168
	4	3,000–4,000	25,314.5106	253,145,106
	5	4,000–5,000	29,491.3872	294,913,872
	6	5,000–6,000	30,152.8006	301,528,006
	7	6,000–7,000	30,659.6591	306,596,591
	8	7,000–8,000	29,884.1941	29,884,1941
	9	8,000–9,000	28,633.5451	286,335,451
	10	9,000–10,000	24,684.4514	246,844,514
	11	10,000–11,000	17,047.1871	170,471,871
	12	11,000–12,000	12,329.2421	123,292,421
	13	12,000–13,000	8,442.9422	84,429,422
	14	13,000–14,000	6,079.2581	60,792,581
	15	14,000–15,000	3,657.8799	36,578,799
	16	15,000–16,000	2,253.7186	22,537,186
	17	16,000–17,000	1,505.6242	15,056,242
	18	> 17,000	1,202.8020	12,028,020
Total			289,311.0484	2,893,110,484



A34. Land distribution according to distance from Latin primary centres, Early Iron Age 1 Early.

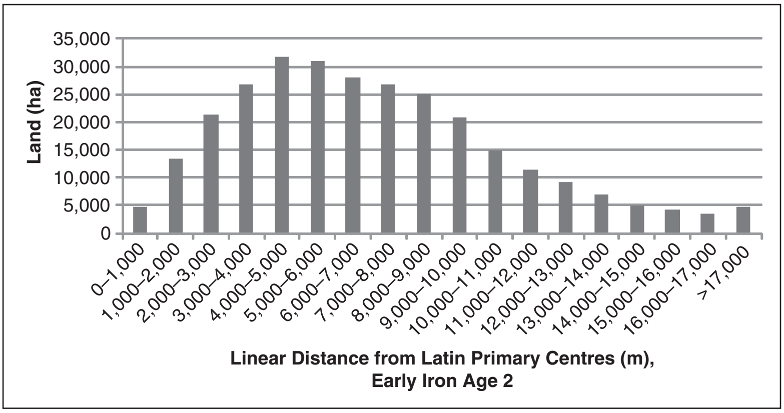
5–6 ha, while for the Early Iron Age and for the Orientalizing and Archaic Ages, land distribution was calculated in relation to primary centres, larger than 20–25 ha ('proto-urban' centres and subsequently 'cities'); in relation to minor centres, between 4 ha and 20–25 ha; and in relation to villages, smaller than 4 ha. Then the association of dependent sites of different hierarchical levels (minor centres and villages) with different distances from their dominant centre (e.g., minor centres in relation to primary centres, or villages in relation to minor centres) was calculated as density and as normalised density, according the same methodology and calculations performed at the territorial level (see Section A2.2 of this appendix). The calculations are presented in Figures A33–A65.

	Class	Distance from Latin Primary Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	5,393.7503	53,937,503
	2	1,000–2,000	14,867.0150	148,670,150
	3	2,000–3,000	23,201.5692	232,015,692
	4	3,000–4,000	29,642.8750	296,428,750
	5	4,000–5,000	34,646.9050	346,469,050
	6	5,000–6,000	33,921.4144	339,214,144
	7	6,000–7,000	31,754.0262	317,540,262
	8	7,000–8,000	29,598.4798	295,984,798
	9	8,000–9,000	27,186.8731	271,868,731
	10	9,000–10,000	21,774.3601	217,743,601
	11	10,000–11,000	14,134.8336	141,348,336
	12	11,000–12,000	8,845.4815	88,454,815
	13	12,000–13,000	5,298.5657	52,985,657
	14	13,000–14,000	3,079.4834	30,794,834
	15	14,000–15,000	1,741.6632	17,416,632
	16	15,000–16,000	1,592.0380	15,920,380
	17	16,000–17,000	1,428.9130	14,289,130
	18	> 17,000	1,202.8019	12,028,019
Total			289,311.0484	2,893,110,484



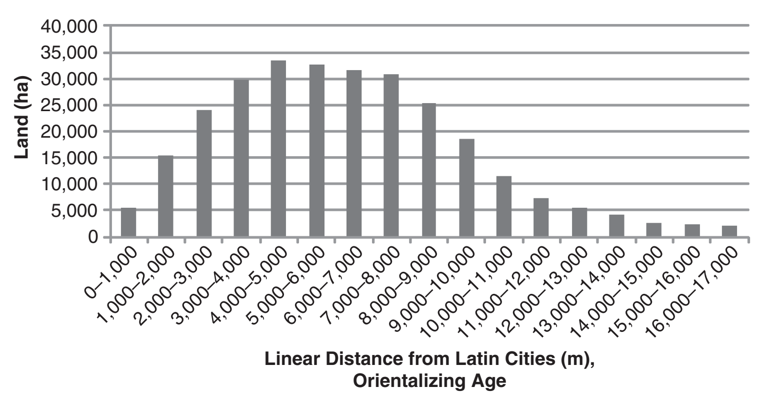
A35. Land distribution according to distance from Latin primary centres, Early Iron Age 1 Late.

	Class	**Distance from Latin Primary Centres (m)**	**Area (ha)**	**Area (m²)**
	1	0–1,000	4,812.2675	48,122,675
	2	1,000–2,000	13,395.0917	133,950,917
	3	2,000–3,000	21,235.2479	212,352,479
	4	3,000–4,000	26,738.1126	267,381,126
	5	4,000–5,000	31,737.3574	317,373,574
	6	5,000–6,000	31,029.0935	310,290,935
	7	6,000–7,000	28,079.3833	280,793,833
	8	7,000–8,000	26,920.7382	269,207,382
	9	8,000–9,000	25,038.4774	250,384,774
	10	9,000–10,000	20,785.5391	207,855,391
	11	10,000–11,000	14,859.5145	148,595,145
	12	11,000–12,000	11,356.0121	113,560,121
	13	12,000–13,000	9,113.2793	91,132,793
	14	13,000–14,000	6,902.5134	69,025,134
	15	14,000–15,000	4,995.5808	49,955,808
	16	15,000–16,000	4,178.5964	41,785,964
	17	16,000–17,000	3,352.5649	33,525,649
	18	> 17,000	4,781.6783	47,816,783
Total			289,311.0484	2,893,110,484



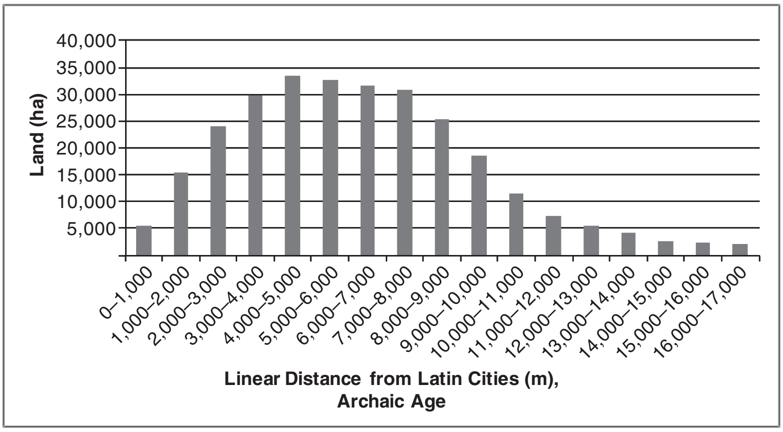
A36. Land distribution according to distance from Latin primary centres, Early Iron Age 2.

	Class	Distance from Latin Cities (m)	Area (ha)	Area (m^2)
	1	0–1,000	5,515.1153	55,151,153
	2	1,000–2,000	15,426.0662	154,260,662
	3	2,000–3,000	24,009.0249	240,090,249
	4	3,000–4,000	29,757.4486	297,574,486
	5	4,000–5,000	33,449.5205	334,495,205
	6	5,000–6,000	32,731.2529	327,312,529
	7	6,000–7,000	31,559.3496	315,593,496
	8	7,000–8,000	30,875.8431	308,758,431
	9	8,000–9,000	25,251.9960	252,519,960
	10	9,000 –10,000	18,586.2173	185,862,173
	11	10,000 –11,000	11,501.6620	115,016,620
	12	11,000–12,000	7,429.2695	74,292,695
	13	12,000–13,000	5,483.4452	54,834,452
	14	13,000–14,000	4,133.0233	41,330,233
	15	14,000–15,000	2,606.8537	26,068,537
	16	15,000–16,000	2,286.1259	22,861,259
	17	16,000–17,000	1,985.7541	19,857,541
	18	> 17,000	6,723.0803	67,230,803
Total			289,311.0484	2,893,110,484



A37. Land distribution according to distance from Latin cities, Orientalizing Age.

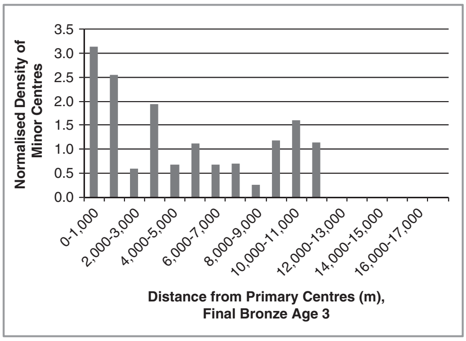
	Class	Distance from Latin Cities (m)	Area (ha)	Area (m^2)
	1	0–1,000	5,515.1153	55,151,153
	2	1,000–2,000	15,426.0662	154,260,662
	3	2,000–3,000	24,009.0249	240,090,249
	4	3,000–4,000	29,757.4486	297,574,486
	5	4,000–5,000	33,449.5205	334,495,205
	6	5,000–6,000	32,731.2529	327,312,529
	7	6,000–7,000	31,559.3496	315,593,496
	8	7,000–8,000	30,875.8431	308,758,431
	9	8,000–9,000	25,251.9960	252,519,960
	10	9,000–10,000	18,586.2173	185,862,173
	11	10,000–11,000	11,501.6620	115,016,620
	12	11,000–12,000	7,429.2695	74,292,695
	13	12,000–13,000	5,483.4452	54,834,452
	14	13,000–14,000	4,133.0233	41,330,233
	15	14,000–15,000	2,606.8537	26,068,537
	16	15,000–16,000	2,286.1259	22,861,259
	17	16,000–17,000	1,985.7541	19,857,541
	18	> 17,000	6,723.0803	67,230,803
Total			289,311.0484	2,893,110,484

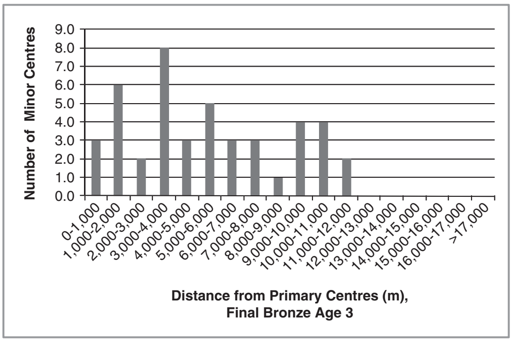


A38. Land distribution according to distance from Latin cities, Archaic Age.

Distribution According to Linear Distance from Primary Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m^2)	Area (ha)	Distance from Primary Centres (m)	Density of Minor Centres (Sites/ ha)	Land Fraction	Site Fraction	Distance from Primary Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	3	62,729,755.9295	6,272.9756	0-1,000	0.0005	0.0217	0.0682	0-1,000	3.1446
	6	154,460,701.1378	15,446.0701	1,000- 2,000	0.0004	0.0534	0.1364	1,000- 2,000	2.5541
	2	223,849,142.0056	22,384.9142	2,000- 3,000	0.0001	0.0774	0.0455	2,000- 3,000	0.5875
	8	269,860,916.0130	26,986.0916	3,000- 4,000	0.0003	0.0933	0.1818	3,000- 4,000	1.9492
	3	291,010,413.7950	29,101.0414	4,000- 5,000	0.0001	0.1006	0.0682	4,000- 5,000	0.6778
	5	296,190,779.2940	29,619.0779	5,000- 6,000	0.0002	0.1024	0.1136	5,000- 6,000	1.1100
	3	296,872,745.7100	29,687.2746	6,000- 7,000	0.0001	0.1026	0.0682	6,000- 7,000	0.6645
	3	284,247,216.3750	28,424.7216	7,000-8,000	0.0001	0.0982	0.0682	7,000-8,000	0.6940
	1	262,410,596.1170	26,241.0596	8,000- 9,000	0.0000	0.0907	0.0227	8,000- 9,000	0.2506
	4	221,690,127.8467	22,169.0128	9,000- 10,000	0.0002	0.0766	0.0909	9,000- 10,000	1.1864
	4	164,354,864.5251	16,435.4865	10,000- 11, 000	0.0002	0.0568	0.0909	10,000- 11, 000	1.6003
	2	115,881,532.4376	11,588.1532	11,000- 12,000	0.0002	0.0401	0.0455	11,000- 12,000	1.1348
		77,618,146.7562	7,761.8147	12,000- 13,000	0.0000	0.0268	0.0000	12,000- 13,000	0.0000
		54,844,337.3750	5,484.4337	13,000 - 14,000	0.0000	0.0190	0.0000	13,000 - 14,000	0.0000
		40,536,486.0149	4,053.6486	14,000- 15, 000	0.0000	0.0140	0.0000	14,000- 15, 000	0.0000
		28,032,133.8880	2,803.2134	15,000- 16,000	0.0000	0.0097	0.0000	15,000- 16,000	0.0000
		23,347,305.0400	2,334.7305	16,000- 17,000	0.0000	0.0081	0.0000	16,000- 17,000	0.0000
		25,173,283.7396	2,517.3284	> 17,000	0.0000	0.0087	0.0000	> 17,000	0.0000
Total	44.0000		289,311.0484						



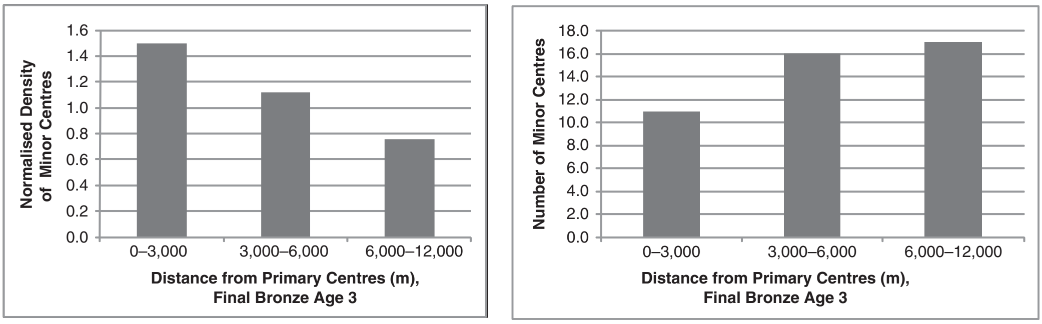


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	6,272.9756	0.0217	0-1,000	3.0000	0.9540	0.9767	4.3877
	15,446.0701	0.0534	1,000- 2,000	6.0000	2.3491	1.5327	5.6740
	22,,384.9142	0.0774	2,000- 3,000	2.0000	3.4044	1.8451	0.5794
	26986.0916	0.0933	3,000- 4,000	8.0000	4.1042	2.0259	3.6980
	29,101.0414	0.1006	4,000- 5,000	3.0000	4.4258	2.1038	0.4594
	29,619.0779	0.1024	5,000- 6,000	5.0000	4.5046	2.1224	0.0545
	29,687.2746	0.1026	6,000- 7,000	3.0000	4.5150	2.1249	0.5084
	28,424.7216	0.0982	7,000-8,000	3.0000	4.3230	2.0792	0.4049
	26,241.0596	0.0907	8,000- 9,000	1.0000	3.9909	1.9977	2.2415
	22,169.0128	0.0766	9,000- 10,000	4.0000	3.3716	1.8362	0.1171
	16,435.4865	0.0568	10,000- 11, 000	4.0000	2.4996	1.5810	0.9006
	11,588.1532	0.0401	11,000- 12,000	2.0000	1.7624	1.3276	0.0320
	7,761.8147	0.0268	12,000- 13,000	0.0000	1.1805	1.0865	1.1805
	5,484.4337	0.0190	13,000 - 14,000	0.0000	0.8341	0.9133	0.8341
	4,053.6486	0.0140	14,000- 15, 000	0.0000	0.6165	0.7852	0.6165
	2,803.2134	0.0097	15,000- 16,000	0.0000	0.4263	0.6529	0.4263
	2,334.7305	0.0081	16,000- 17,000	0.0000	0.3551	0.5959	0.3551
	2,517.3284	0.0087	> 17,000	0.0000	0.3828	0.6187	0.3828
Total	289,311.0484			44.0000		**Chi-Square**	22.8527
						Chi-Sq. Prob.	*0.1541*

A39. Distribution of minor centres according to distance from primary centres, Final Bronze Age 3.

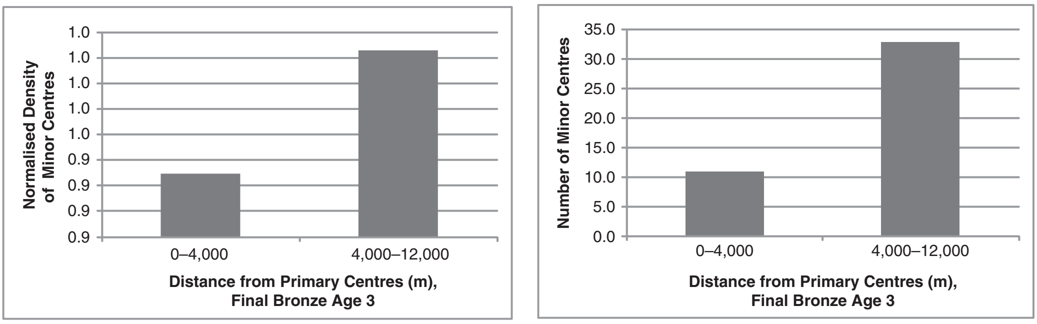
Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	44,103.9599	0.1668	0–3,000	11.0000	7.3408	2.7094	1.8241	1.4985
	85,706.2109	0.3242	3,000–6,000	16.0000	14.2651	3.7769	0.2110	1.1216
	134,545.7083	0.5090	6,000–12,000	17.0000	22.3941	4.7322	1.2993	0.7591
Total	264,355.8791			44.0000				

Chi-Square	3.3343
Chi-Sq. Prob.	*0.1888*



Chi-Square Test

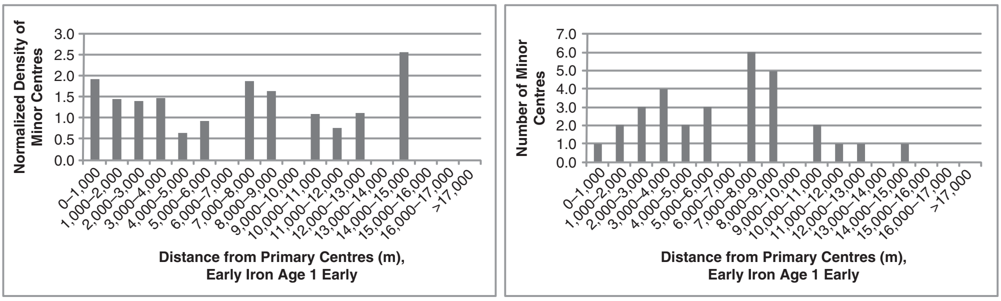
	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	71,090.0515	0.2689	0–4,000	11.0000	11.8324	3.4398	0.0586	0.9297
	193,265.8276	0.7311	4,000–12,000	33.0000	32.1676	5.6716	0.0215	1.0259
Total	264,355.8791			44.0000				

Chi-Square	0.0801
Chi-Sq. Prob.	0.7772

A40. Distribution of minor centres according to distance from primary centres, Final Bronze Age 3, reorganised classes.

Distribution According to Linear Distance from Primary Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m²)	Area (ha)	Distance from Primary Centres (m)	Density of Minor Centres (Sites/ ha)	Land Fraction	Site Fraction	Distance from Primary Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	1	48,740,284.0243	4,874.0284	0–1,000	0.0002	0.0168	0.0323	0–1,000	1.9148
	2	130,061,009.8494	13,006.1010	1,000–2,000	0.0002	0.0450	0.0645	1,000–2,000	1.4351
	3	200,917,168.4411	20,091.7168	2,000–3,000	0.0001	0.0694	0.0968	2,000–3,000	1.3935
	4	253,145,105.8801	25,314.5106	3,000–4,000	0.0002	0.0875	0.1290	3,000–4,000	1.4747
	2	294,913,872.0710	29,491.3872	4,000–5,000	0.0001	0.1019	0.0645	4,000–5,000	0.6329
	3	301,528,005.5610	30,152.8006	5,000–6,000	0.0001	0.1042	0.0968	5,000–6,000	0.9285
		306,596,590.7770	30,659.6591	6,000–7,000	0.0000	0.1060	0.0000	6,000–7,000	0.0000
	6	298,841,940.8940	29,884.1941	7,000–8,000	0.0002	0.1033	0.1935	7,000–8,000	1.8738
	5	286,335,451.0070	28,633.5451	8,000–9,000	0.0002	0.0990	0.1613	8,000–9,000	1.6297
		246,844,514.0800	24,684.4514	9,000 –10,000	0.0000	0.0853	0.0000	9,000 –10,000	0.0000
	2	170,471,870.5061	17,047.1871	10,000 –11,000	0.0001	0.0589	0.0645	10,000 –11,000	1.0949
	1	123,292,421.2177	12,329.2421	11,000–12,000	0.0001	0.0426	0.0323	11,000–12,000	0.7569
	1	84,429,421.7789	8,442.9422	12,000–13,000	0.0001	0.0292	0.0323	12,000–13,000	1.1054
		60,792,580.5653	6,079.2581	13,000–14,000	0.0000	0.0210	0.0000	13,000–14,000	0.0000
	1	36,578,799.3120	3,657.8799	14,000–15,000	0.0003	0.0126	0.0323	14,000–15,000	2.5514
		22,537,186.3133	2,253.7186	15,000–16,000	0.0000	0.0078	0.0000	15,000–16,000	0.0000
		15,056,241.9895	1,505.6242	16,000–17,000	0.0000	0.0052	0.0000	16,000–17,000	0.0000
		12,028,019.7323	1,202.8020	> 17,000	0.0000	0.0042	0.0000	> 17,000	0.0000
Total	31.0000		289,311.0484						

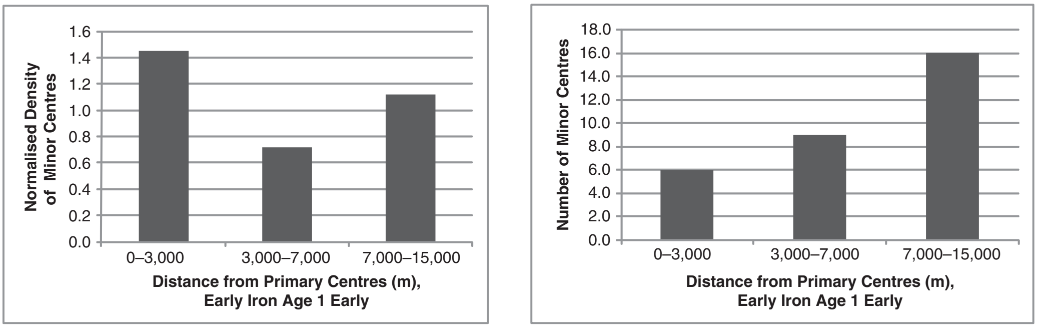


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	4,874.0284	0.0168	0–1,000	1.0000	0.5223	0.7227	0.4370
	13,006.1010	0.0450	1,000–2,000	2.0000	1.3936	1.1805	0.2638
	20,091.7168	0.0694	2,000–3,000	3.0000	2.1528	1.4673	0.3334
	25,314.5106	0.0875	3,000–4,000	4.0000	2.7125	1.6470	0.6111
	29,491.3872	0.1019	4,000–5,000	2.0000	3.1600	1.7776	0.4258
	30,152.8006	0.1042	5,000–6,000	3.0000	3.2309	1.7975	0.0165
	30,659.6591	0.1060	6,000–7,000	0.0000	3.2852	1.8125	3.2852
	29,884.1941	0.1033	7,000–8,000	6.0000	3.2021	1.7894	2.4447
	28,633.5451	0.0990	8,000–9,000	5.0000	3.0681	1.7516	1.2164
	24,684.4514	0.0853	9,000 –10,000	0.0000	2.6450	1.6263	2.6450
	17,047.1871	0.0589	10,000 –11,000	2.0000	1.8266	1.3515	0.0165
	12,329.2421	0.0426	11,000–12,000	1.0000	1.3211	1.1494	0.0780
	8,442.9422	0.0292	12,000–13,000	1.0000	0.9047	0.9511	0.0100
	6,079.2581	0.0210	13,000–14,000	0.0000	0.6514	0.8071	0.6514
	3,657.8799	0.0126	14,000–15,000	1.0000	0.3919	0.6261	0.9433
	2,253.7186	0.0078	15,000–16,000	0.0000	0.2415	0.4914	0.2415
	1,505.6242	0.0052	16,000–17,000	0.0000	0.1613	0.4017	0.1613
	1,202.8020	0.0042	> 17,000	0.0000	0.1289	0.3590	0.1289
Total	289,311.0484			31.0000			
						Chi-Square	13.9100
						Chi-Sq. Prob.	*0.6735*

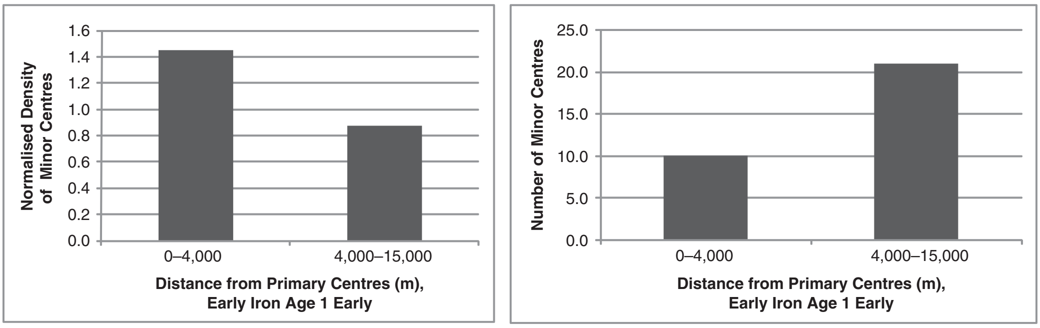
A41. Distribution of minor centres according to distance from primary centres, Early Iron Age 1 Early.

Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	37,971.8462	0.1335	0–3,000	6.0000	4.1397	2.0346	0.8360	1.4494
	115,618.3574	0.4066	3,000–7,000	9.0000	12.6048	3.5503	1.0309	0.7140
	130,758.6999	0.4599	7,000–15,000	16.0000	14.2554	3.7756	0.2135	1.1224
Total	284,348.9036			31.0000				
						Chi-Square	2.0804	
						Chi-Sq. Prob.	*0.3534*	



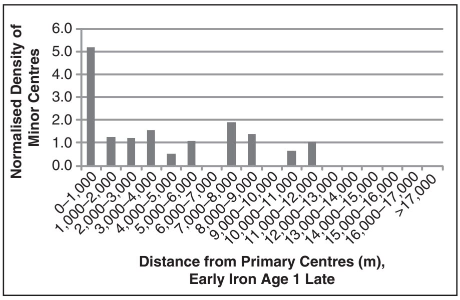
Chi-Square Test

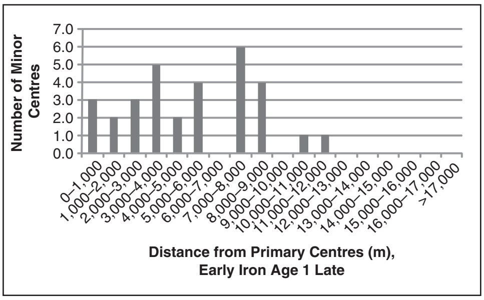
	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	63,286.3568	0.2226	0–4,000	10.0000	6.8995	2.6267	1.3933	1.4494
	221,062.5468	0.7774	4,000–15,000	21.0000	24.1005	4.9092	0.3989	0.8714
Total	284,348.9036			31.0000				
						Chi-Square	1.7921	
						Chi-Sq. Prob.	*0.1807*	

A42. Distribution of minor centres according to distance from primary centres, Early Iron Age 1 Early, reorganised classes.

Distribution According to Linear Distance from Primary Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m²)	Area (ha)	Distance from Primary Centres (m)	Density of Minor Centres (Sites/ ha)	Land Fraction	Site Fraction	Distance from Primary Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	3	53,937,503.4078	5,393.7503	0–1,000	0.0006	0.0186	0.0968	0–1,000	5.1908
	2	148,670,150.1565	14,867.0150	1,000–2,000	0.0001	0.0514	0.0645	1,000–2,000	1.2555
	3	232,015,691.8201	23,201.5692	2,000–3,000	0.0001	0.0802	0.0968	2,000–3,000	1.2067
	5	296,428,750.3761	29,642.8750	3,000–4,000	0.0002	0.1025	0.1613	3,000–4,000	1.5742
	2	346,469,050.3690	34,646.9050	4,000–5,000	0.0001	0.1198	0.0645	4,000–5,000	0.5387
	4	339,214,143.7960	33,921.4144	5,000–6,000	0.0001	0.1172	0.1290	5,000–6,000	1.1005
		317,540,261.5310	31,754.0262	6,000–7,000	0.0000	0.1098	0.0000	6,000–7,000	0.0000
	6	295,984,797.9260	29,598.4798	7,000–8,000	0.0002	0.1023	0.1935	7,000–8,000	1.8918
	4	271,868,731.0700	27,186.8731	8,000–9,000	0.0001	0.0940	0.1290	8,000–9,000	1.3731
		217,743,600.6400	21,774.3601	9,000 –10,000	0.0000	0.0753	0.0000	9,000 –10,000	0.0000
	1	141,348,336.0957	14,134.8336	10,000 –11,000	0.0001	0.0489	0.0323	10,000 –11,000	0.6603
	1	88,454,814.8661	8,845.4815	11,000–12,000	0.0001	0.0306	0.0323	11,000–12,000	1.0551
		52,985,656.7142	5,298.5657	12,000–13,000	0.0000	0.0183	0.0000	12,000–13,000	0.0000
		30,794,833.6393	3,079.4834	13,000–14,000	0.0000	0.0106	0.0000	13,000–14,000	0.0000
		17,416,632.2360	1,741.6632	14,000–15,000	0.0000	0.0060	0.0000	14,000–15,000	0.0000
		15,920,379.6980	1,592.0380	15,000–16,000	0.0000	0.0055	0.0000	15,000–16,000	0.0000
		14,289,130.2890	1,428.9130	16,000–17,000	0.0000	0.0049	0.0000	16,000–17,000	0.0000
		12,028,019.3692	1,202.8019	more than 17,000	0.0000	0.0042	0.0000	more than 17,000	0.0000
Totals	31.0000		289,311.0484						



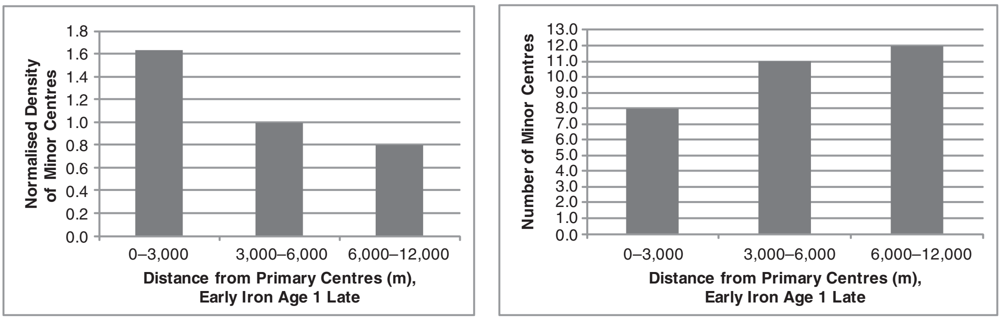


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	5,393.7503	0.0186	0–1,000	3.0000	0.5779	0.7602	10.1503
	14,867.0150	0.0514	1,000–2,000	2.0000	1.5930	1.2621	0.1040
	23,201.5692	0.0802	2,000–3,000	3.0000	2.4861	1.5767	0.1062
	29,642.8750	0.1025	3,000–4,000	5.0000	3.1763	1.7822	1.0471
	34646.9050	0.1198	4,000–5,000	2.0000	3.7125	1.9268	0.7899
	33,921.4144	0.1172	5,000–6,000	4.0000	3.6347	1.9065	0.0367
	31,754.0262	0.1098	6,000–7,000	0.0000	3.4025	1.8446	3.4025
	29,598.4798	0.1023	7,000–8,000	6.0000	3.1715	1.7809	2.5226
	27,186.8731	0.0940	8,000–9,000	4.0000	2.9131	1.7068	0.4055
	21,774.3601	0.0753	9,000 –10,000	0.0000	2.3331	1.5275	2.3331
	14,,134.8336	0.0489	10,000 –11,000	1.0000	1.5146	1.2307	0.1748
	8845.4815	0.0306	11,000–12,000	1.0000	0.9478	0.9736	0.0029
	5,298.5657	0.0183	12,000–13,000	0.0000	0.5677	0.7535	0.5677
	3,079.4834	0.0106	13,000–14,000	0.0000	0.3300	0.5744	0.3300
	1,741.6632	0.0060	14,000–15,000	0.0000	0.1866	0.4320	0.1866
	1,592.0380	0.0055	15,000–16,000	0.0000	0.1706	0.4130	0.1706
	1,428.9130	0.0049	16,000–17,000	0.0000	0.1531	0.3913	0.1531
	1,202.8019	0.0042	> 17,000	0.0000	0.1289	0.3590	0.1289
Total	289,311.0484			31.0000			
						Chi-Square	22.6126
						Chi-Sq. Prob.	*0.1623*

A43. Distribution of minor centres according to distance from primary centres, Early Iron Age 1 Late.

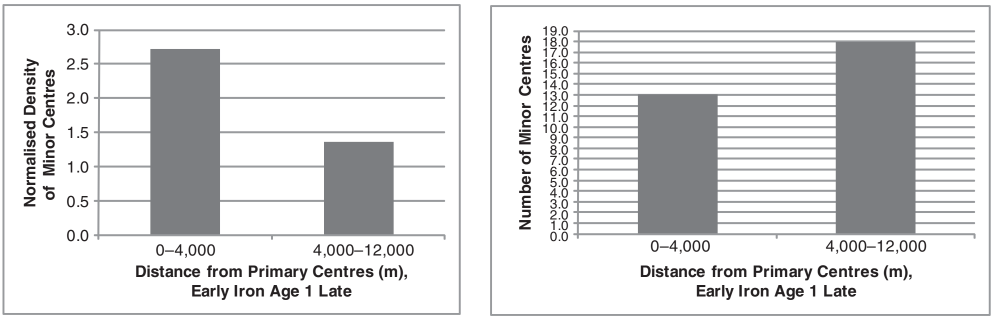
Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	43,462.3345	0.1581	0–3,000	8.0000	4.9000	2.2136	1.9613	1.6327
	98,211.1945	0.3572	3,000–6,000	11.0000	11.0724	3.3275	0.0005	0.9935
	133,294.0542	0.4848	6,000–12,000	12.0000	15.0276	3.8766	0.6100	0.7985
Total	274,967.5832			31.0000				

Chi-Square	2.5717
Chi-Sq. Prob.	*0.2764*



Chi-Square Test

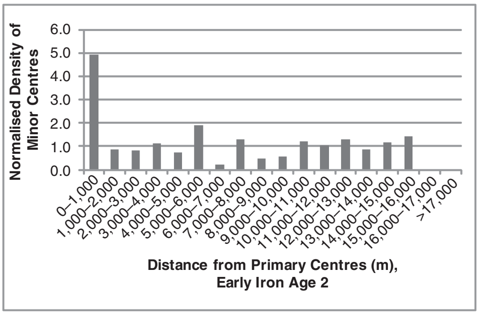
	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	73,105.2096	0.2659	0–4,000	13.0000	8.2419	2.8709	2.7468	2.7165
	201,862.3736	0.7341	4,000–12,000	18.0000	22.7581	4.7705	0.9948	1.3622
Total	274,967.5832			31.0000				

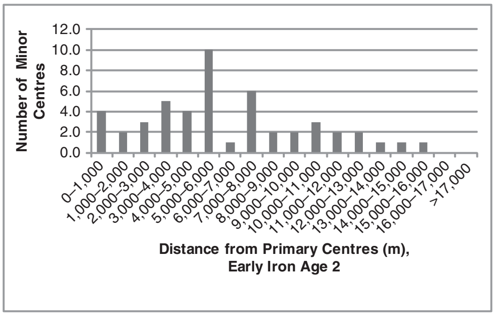
Chi-Square	3.7416
Chi-Sq. Prob.	*0.0974*

A44. Distribution of minor centres according to distance from primary centres, Early Iron Age 1 Late, reorganised classes.

Distribution According to Linear Distance from Primary Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m²)	Area (ha)	Distance from Primary Centres (m)	Density of Minor Centres (Sites/ ha)	Land Fraction	Site Fraction	Distance from Primary Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	4	48,122,674.9895	4,812.2675	0-1,000	0.0008	0.0166	0.0816	0-1,000	4.9077
	2	133,950,917.3708	13,395.0917	1,000–2,000	0.0001	0.0463	0.0408	1,000–2,000	0.8816
	3	212,352,478.8706	21,235.2479	2,000–3,000	0.0001	0.0734	0.0612	2,000–3,000	0.8341
	5	267,381,125.6113	26,738.1126	3,000–4,000	0.0002	0.0924	0.1020	3,000–4,000	1.1041
	4	317,373,573.5670	31,737.3574	4,000–5,000	0.0001	0.1097	0.0816	4,000–5,000	0.7441
	10	310,290,935.3530	31,029.0935	5,000–6,000	0.0003	0.1073	0.2041	5,000–6,000	1.9028
	1	280,793,833.4320	28,079.3833	6,000–7,000	0.0000	0.0971	0.0204	6,000–7,000	0.2103
	6	269,207,382.2440	26,920.7382	7,000–8,000	0.0002	0.0931	0.1224	7,000–8,000	1.3159
	2	250,384,774.3200	25,038.4774	8,000–9,000	0.0001	0.0865	0.0408	8,000–9,000	0.4716
	2	207,855,390.7529	20,785.5391	9,000–10,000	0.0001	0.0718	0.0408	9,000–10,000	0.5681
	3	148,595,145.1548	14,859.5145	10,000–11,000	0.0002	0.0514	0.0612	10,000–11,000	1.1920
	2	113,560,121.4530	11,356.0121	11,000–12,000	0.0002	0.0393	0.0408	11,000–12,000	1.0399
	2	91,132,793.2510	9,113.2793	12,000–13,000	0.0002	0.0315	0.0408	12,000–13,000	1.2958
	1	69,025,133.7070	6,902.5134	13,000–14,000	0.0001	0.0239	0.0204	13,000–14,000	0.8554
	1	49,955,807.9660	4,995.5808	14,000–15,000	0.0002	0.0173	0.0204	14,000–15,000	1.1819
	1	41,785,964.2160	4,178.5964	15,000–16,000	0.0002	0.0144	0.0204	15,000–16,000	1.4130
		33,525,649.1840	3,352.5649	16,000–17,000	0.0000	0.0116	0.0000	16,000–17,000	0.0000
		47,816,782.5571	4,781.6783	> 17,000	0.0000	0.0165	0.0000	> 17,000	0.0000
Total	49.0000		289,311.0484						



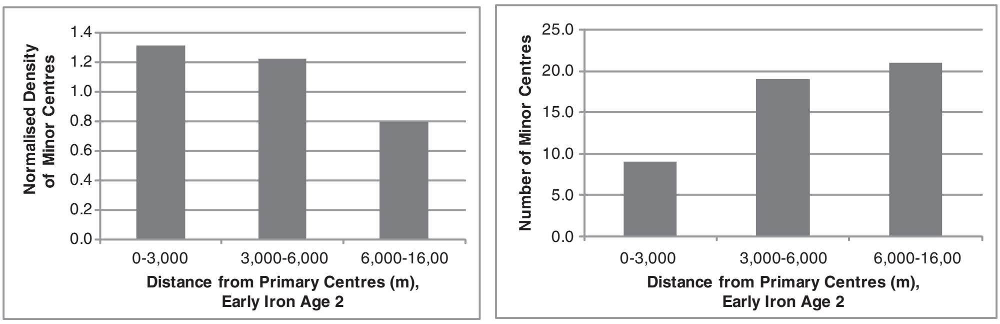


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	4,812.2675	0.0166	0-1,000	4.0000	0.8150	0.9028	12.4459
	13,395.0917	0.0463	1,000–2,000	2.0000	2.2687	1.5062	0.0318
	21,235.2479	0.0734	2,000–3,000	3.0000	3.5966	1.8965	0.0990
	26,738.1126	0.0924	3,000–4,000	5.0000	4.5286	2.1280	0.0491
	31,737.3574	0.1097	4,000–5,000	4.0000	5.3753	2.3185	0.3519
	31,029.0935	0.1073	5,000–6,000	10.0000	5.2553	2.2925	4.2836
	28,079.3833	0.0971	6,000–7,000	1.0000	4.7557	2.1808	2.9660
	26,920.7382	0.0931	7,000–8,000	6.0000	4.5595	2.1353	0.4551
	25,038.4774	0.0865	8,000–9,000	2.0000	4.2407	2.0593	1.1840
	20,785.5391	0.0718	9,000–10,000	2.0000	3.5204	1.8763	0.6566
	14,859.5145	0.0514	10,000–11,000	3.0000	2.5167	1.5864	0.0928
	11,356.0121	0.0393	11,000–12,000	2.0000	1.9233	1.3868	0.0031
	9,113.2793	0.0315	12,000–13,000	2.0000	1.5435	1.2424	0.1350
	6,902.5134	0.0239	13,000–14,000	1.0000	1.1691	1.0812	0.0244
	4,995.5808	0.0173	14,000–15,000	1.0000	0.8461	0.9198	0.0280
	4,178.5964	0.0144	15,000–16,000	1.0000	0.7077	0.8413	0.1207
	3,352.5649	0.0116	16,000–17,000	0.0000	0.5678	0.7535	0.5678
	4,781.6783	0.0165	> 17,000	0.0000	0.8099	0.8999	0.8099
Total	289,311.0484			49.0000			
						Chi-Square	24.3047
						Chi-Sq. Prob.	*0.1114*

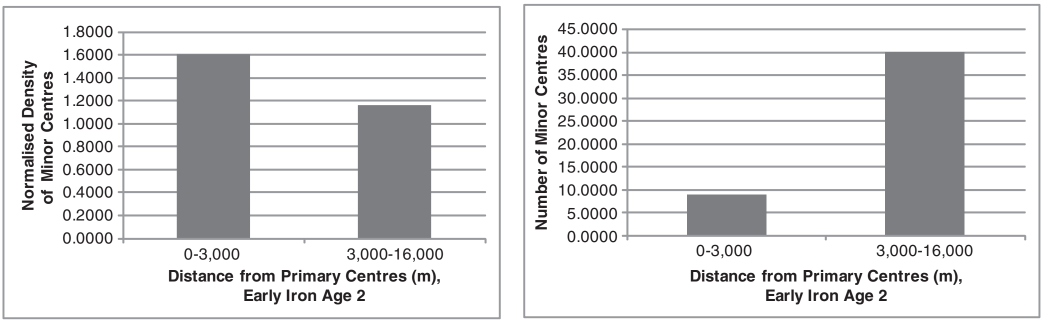
A45. Distribution of minor centres according to distance from primary centres, Early Iron Age 2.

Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	39,442.6071	0.1403	0 - 3,000	9.0000	6.8736	2.6217	0.6578	1.3094
	89,504.5635	0.3183	3,000- 6,000	19.0000	6.6847	2.5855	22.6883	1.2181
	152,229.6346	0.5414	6,000- 16,000	21.0000	11.3694	3.3719	8.1576	0.7916
Total	281,176.8052			49.0000				
						Chi-Square	31.5038	
						Chi-Sq. Prob.	**<0,0001**	



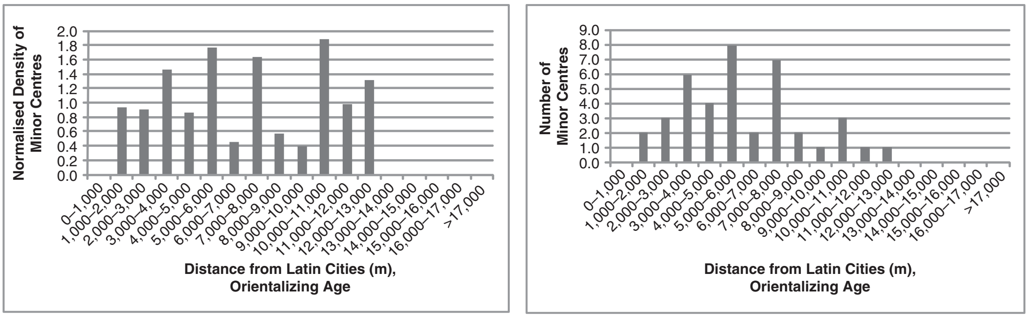
Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	39,442.6071	0.1403	0 - 3,000	9.0000	6.8736	2.6217	0.6578	1.6040
	241,734.1981	0.8597	3,000- 16,000	40.0000	42.1264	6.4905	0.1073	1.1632
Total	281,176.8052			49.0000				
						Chi-Square	0.7652	
						Chi-Sq. Prob.	0.3817	

A46. Distribution of minor centres according to distance from primary centres, Early Iron Age 2, reorganised classes.

Distribution According to Linear Distance from Latin Cities (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m^2)	Area (ha)	Distance from Latin Cities (m)	Density of Minor Centres (Sites/ ha)	Land Fraction	Site Fraction	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
		55,151,153.4102	5,515.1153	0–1,000	0.0000	0.0191	0.0000	0–1,000	0.0000
	2	154,260,661.8919	15,426.0662	1,000–2,000	0.0001	0.0533	0.0500	1,000–2,000	0.9377
	3	240,090,249.4010	24,009.0249	2,000–3,000	0.0001	0.0830	0.0750	2,000–3,000	0.9038
	6	297,574,486.4890	29,757.4486	3,000–4,000	0.0002	0.1029	0.1500	3,000–4,000	1.4583
	4	334,495,204.9613	33,449.5205	4,000–5,000	0.0001	0.1156	0.1000	4,000–5,000	0.8649
	8	327,312,528.9960	32,731.2529	5,000–6,000	0.0002	0.1131	0.2000	5,000–6,000	1.7678
	2	315,593,495.5590	31,559.3496	6,000–7,000	0.0001	0.1091	0.0500	6,000–7,000	0.4584
	7	308,758,431.4528	30,875.8431	7,000–8,000	0.0002	0.1067	0.1750	7,000–8,000	1.6398
	2	252,519,959.7937	25,251.9960	8,000–9,000	0.0001	0.0873	0.0500	8,000–9,000	0.5728
	1	185,862,172.7127	18,586.2173	9,000–10,000	0.0001	0.0642	0.0250	9,000–10,000	0.3891
	3	115,016,619.8107	11,501.6620	10,000–11,000	0.0003	0.0398	0.0750	10,000–11,000	1.8865
	1	74,292,694.6438	7,429.2695	11,000–12,000	0.0001	0.0257	0.0250	11,000–12,000	0.9736
	1	54,834,452.2120	5,483.4452	12,000–13,000	0.0002	0.0190	0.0250	12,000–13,000	1.3190
		41,330,232.6300	4,133.0233	13,000–14,000	0.0000	0.0143	0.0000	13,000–14,000	0.0000
		26,068,536.6430	2,606.8537	14,000–15,000	0.0000	0.0090	0.0000	14,000–15,000	0.0000
		22,861,259.3650	2,286.1259	15,000–16,000	0.0000	0.0079	0.0000	15,000–16,000	0.0000
		19,857,541.0130	1,985.7541	16,000–17,000	0.0000	0.0069	0.0000	16,000–17,000	0.0000
		67,230,803.0149	6,723.0803	> 17,000	0.0000	0.0232	0.0000	> 17,000	0.0000
Total	40.0000		289,311.0484						

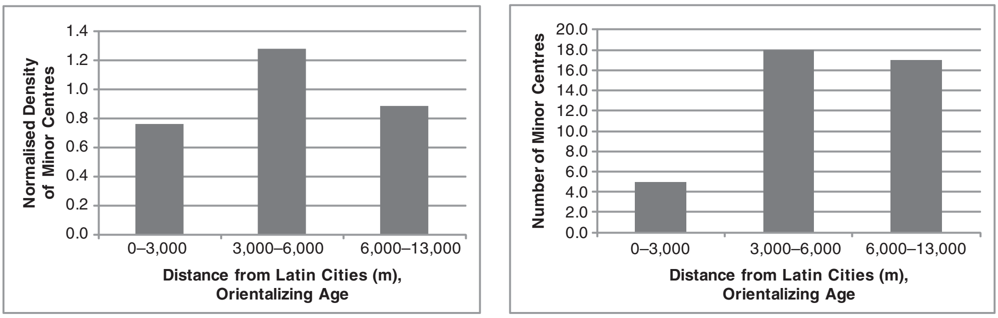


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	5,515.1153	0.0191	0–1,000	0.0000	0.7625	0.8732	0.7625
	15,426.0662	0.0533	1,000–2,000	2.0000	2.1328	1.4604	0.0083
	24,009.0249	0.0830	2,000–3,000	3.0000	3.3195	1.8219	0.0307
	29,757.4486	0.1029	3,000–4,000	6.0000	4.1142	2.0284	0.8643
	33,449.5205	0.1156	4,000–5,000	4.0000	4.6247	2.1505	0.0844
	32,731.2529	0.1131	5,000–6,000	8.0000	4.5254	2.1273	2.6678
	31,559.3496	0.1091	6,000–7,000	2.0000	4.3634	2.0889	1.2801
	30,875.8431	0.1067	7,000–8,000	7.0000	4.2689	2.0661	1.7473
	25,251.9960	0.0873	8,000–9,000	2.0000	3.4913	1.8685	0.6370
	18,586.2173	0.0642	9,000–10,000	1.0000	2.5697	1.6030	0.9589
	11,501.6620	0.0398	10,000–11,000	3.0000	1.5902	1.2610	1.2498
	7,429.2695	0.0257	11,000–12,000	1.0000	1.0272	1.0135	0.0007
	5,483.4452	0.0190	12,000–13,000	1.0000	0.7581	0.8707	0.0772
	4,133.0233	0.0143	13,000–14,000	0.0000	0.5714	0.7559	0.5714
	2,606.8537	0.0090	14,000–15,000	0.0000	0.3604	0.6004	0.3604
	2,286.1259	0.0079	15,000–16,000	0.0000	0.3161	0.5622	0.3161
	1,985.7541	0.0069	16,000–17,000	0.0000	0.2745	0.5240	0.2745
	6723.0803	0.0232	> 17,000	0.0000	0.9295	0.9641	0.9295
Total	289,311.0484			40.0000			
						Chi-Square	12.8210
						Chi-Sq. Prob.	0.7481

A47. Distribution of minor centres according to distance from Latin cities, Orientializing Age.

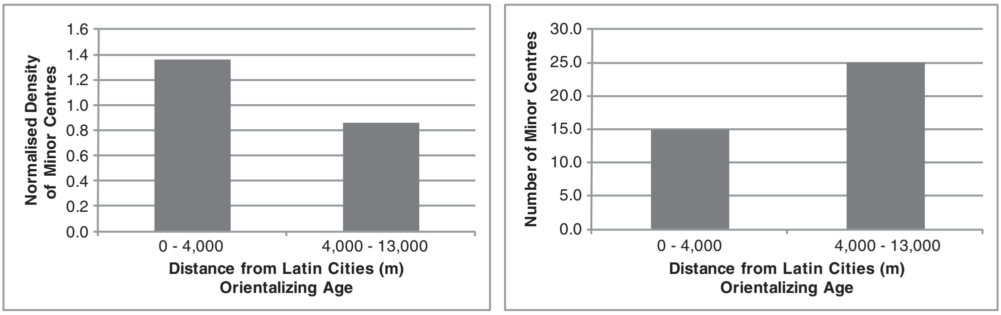
Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	44,950.2065	0.1655	0 - 3,000	5.0000	6.6206	2.5731	0.3967	0.7552
	95,938.2220	0.3533	3,000- 6,000	18.0000	14.1306	3.7591	1.0596	1.2738
	130,687.7826	0.4812	6,000- 13,000	17.0000	19.2488	4.3873	0.2627	0.8832
Total	271,576.2111			40.0000				

Chi-Square	1.7190
Chi-Sq. Prob.	0.4234



Chi-Square Test

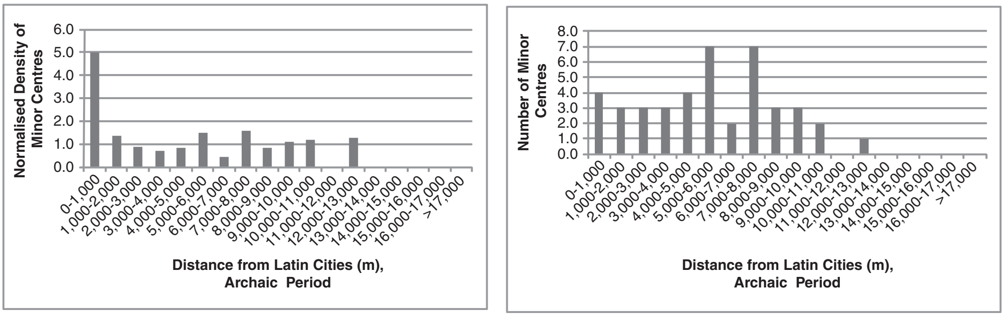
	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	74,707.6551	0.2751	0–4,000	15.0000	11.0036	3.3172	1.4515	1.3632
	196,868.5560	0.7249	4,000–13,000	25.0000	28.9964	5.3848	0.5508	0.8622
Total	271,576.2111			40.0000				

Chi-Square	2.0023
Chi-Sq. Prob.	*0.1571*

A48. Distribution of minor centres according to distance from Latin cities, Orientalizing Age, reorganised classes.

Distribution According to Linear Distance from Latin Cities
(Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m^2)	Area (ha)	Distance from Latin Cities (m)	Density of Minor Centres (Sites/ ha)	Land Fraction	Site Fraction	Distance from Latin Cities (m)	Normalised Density (Site Fraction/ Land Fraction)
	4	55,151,153.4102	5,515.1153	0–1,000	0.0007	0.0191	0.0952	0–1,000	4.9960
	3	154,260,661.8919	15,426.0662	1,000–2,000	0.0002	0.0533	0.0714	1,000– 2,000	1.3396
	3	240,090,249.4010	24,009.0249	2,000–3,000	0.0001	0.0830	0.0714	2,000– 3,000	0.8607
	3	297,574,486.4890	29,757.4486	3,000–4,000	0.0001	0.1029	0.0714	3,000– 4,000	0.6945
	4	334,495,204.9613	33,449.5205	4,000–5,000	0.0001	0.1156	0.0952	4,000– 5,000	0.8237
	7	327,312,528.9960	32,731.2529	5,000–6,000	0.0002	0.1131	0.1667	5,000– 6,000	1.4732
	2	315,593,495.5590	31,559.3496	6,000–7,000	0.0001	0.1091	0.0476	6,000– 7,000	0.4365
	7	308,758,431.4528	30,875.8431	7,000–8,000	0.0002	0.1067	0.1667	7,000– 8,000	1.5617
	3	252,519,959.7937	25,251.9960	8,000–9,000	0.0001	0.0873	0.0714	8,000– 9,000	0.8184
	3	185,862,172.7127	18,586.2173	9,000–10,000	0.0002	0.0642	0.0714	9,000 – 10,000	1.1118
	2	115,016,619.8107	11,501.6620	10,000–11,000	0.0002	0.0398	0.0476	10,000 – 11,000	1.1978
		74,292,694.6438	7,429.2695	11,000–12,000	0.0000	0.0257	0.0000	11,000– 12,000	0.0000
	1	54,834,452.2120	5,483.4452	12,000–13,000	0.0002	0.0190	0.0238	12,000– 13,000	1.2562
		41,330,232.6300	4,133.0233	13,000–14,000	0.0000	0.0143	0.0000	13,000– 14,000	0.0000
		26,068,536.6430	2,606.8537	14,000–15,000	0.0000	0.0090	0.0000	14,000– 15,000	0.0000
		22,861,259.3650	2,286.1259	15,000–16,000	0.0000	0.0079	0.0000	15,000– 16,000	0.0000
		19,857,541.0130	1,985.7541	16,000–17,000	0.0000	0.0069	0.0000	16,000– 17,000	0.0000
		67,230,803.0149	6,723.0803	> 17,000	0.0000	0.0232	0.0000	> 17,000	0.0000
Total	42.0000		289,311.0484						

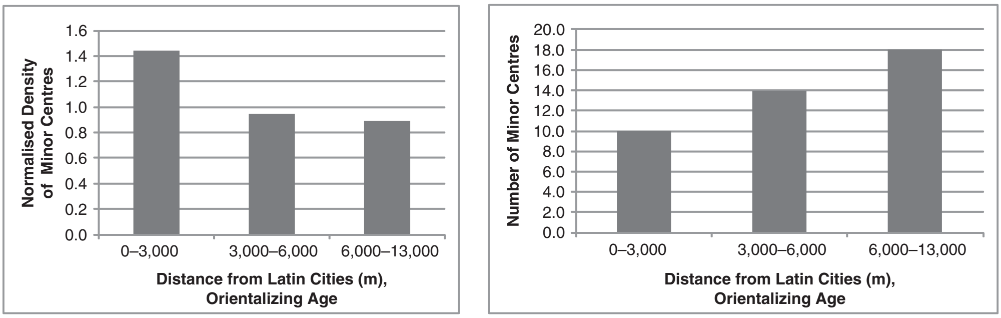


Chi–Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	5,515.1153	0.0191	0–1,000	4.0000	0.8006	0.8948	12.7846
	15,426.0662	0.0533	1,000–2,000	3.0000	2.2394	1.4965	0.2583
	24,009.0249	0.0830	2,000–3,000	3.0000	3.4854	1.8669	0.0676
	29,757.4486	0.1029	3,000–4,000	3.0000	4.3200	2.0785	0.4033
	33,449.5205	0.1156	4,000–5,000	4.0000	4.8559	2.2036	0.1509
	32,731.2529	0.1131	5,000–6,000	7.0000	4.7517	2.1798	1.0638
	31,559.3496	0.1091	6,000–7,000	2.0000	4.5815	2.1405	1.4546
	30,875.8431	0.1067	7,000– 8,000	7.0000	4.4823	2.1171	1.4142
	25,251.9960	0.0873	8,000–9,000	3.0000	3.6659	1.9147	0.1210
	18,586.2173	0.0642	9,000–10,000	3.0000	2.6982	1.6426	0.0338
	11,501.6620	0.0398	10,000–11,000	2.0000	1.6697	1.2922	0.0653
	7,429.2695	0.0257	11,000–12,000	0.0000	1.0785	1.0385	1.0785
	5,483.4452	0.0190	12,000–13,000	1.0000	0.7960	0.8922	0.0523
	4,133.0233	0.0143	13,000–14,000	0.0000	0.6000	0.7746	0.6000
	2,606.8537	0.0090	14,000–15,000	0.0000	0.3784	0.6152	0.3784
	2,286.1259	0.0079	15,000–16,000	0.0000	0.3319	0.5761	0.3319
	1,985.7541	0.0069	16,000–17,000	0.0000	0.2883	0.5369	0.2883
	6,723.0803	0.0232	> 17,000	0.0000	0.9760	0.9879	0.9760
Total	289,311.0484			42.0000			
						Chi-Square	21.5227
						Chi-Sq. Prob.	0.2038

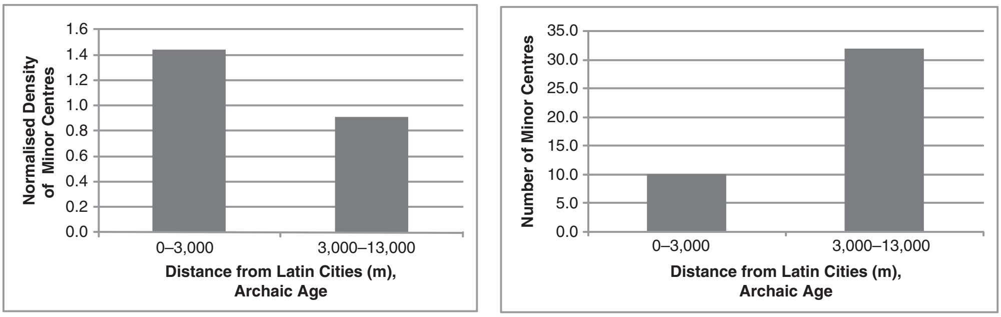
A49. Distribution of minor centres according to distance from Latin cities, Archaic Age.

Distribution According to Reorganised Classes



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	44,950.2065	0.1655	0–3,000	10.0000	6.9517	2.6366	1.3367	1.4385
	95,938.2220	0.3533	3,000–6,000	14.0000	14.8371	3.8519	0.0472	0.9436
	130,687.7826	0.4812	6,000–13,000	18.0000	20.2112	4.4957	0.2419	0.8906
Total	271,576.2111			42.0000				
						Chi-Square	1.6259	
						Chi-Sq. Prob.	0.4435	

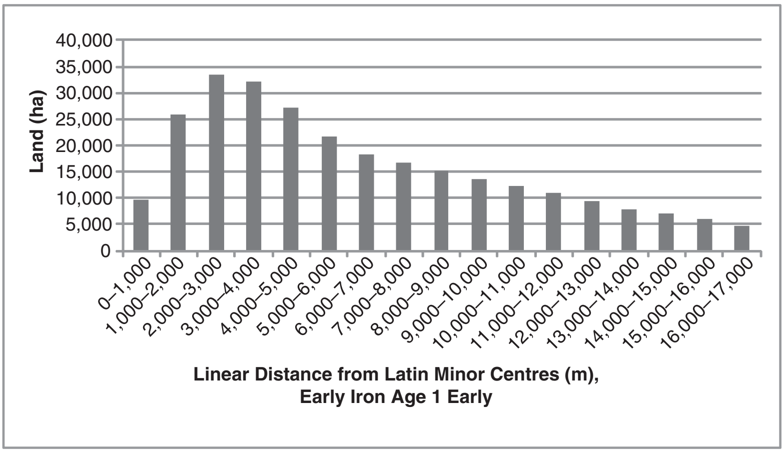


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Latin Cities (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	44,950.2065	0.1655	0–3,000	10.0000	6.9517	2.6366	1.3367	1.4385
	226,626.0047	0.8345	3,000–13,000	32.0000	35.0483	5.9202	0.2651	0.9130
Total	271,576.2111			42.0000				
						Chi-Square	1.6018	
						Chi-Sq. Prob.	0.2056	

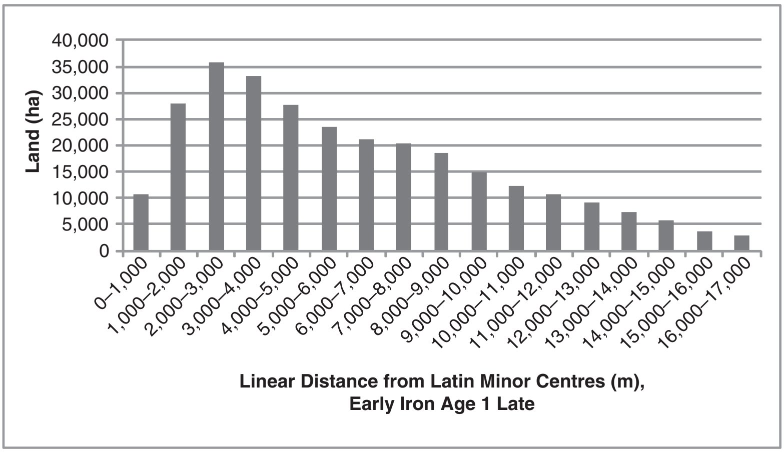
A50. Distribution of minor centres according to distance from Latin cities, Archaic Age, reorganised classes.

	Class	Distance from Latin Minor Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	9,607.9319	96,079,319
	2	1,000–2,000	25,754.6694	257,546,694
	3	2,000–3,000	33,389.0179	333,890,179
	4	3,000–4,000	32,032.5703	320,325,703
	5	4,000–5,000	27,295.0556	272,950,556
	6	5,000–6,000	21,819.1783	218,191,783
	7	6,000–7,000	18,262.9372	182,629,372
	8	7,000–8,000	16,839.0168	168,390,168
	9	8,000– 9,000	15,062.5120	150,625,120
	10	9,000–10,000	13,598.1223	135,981,223
	11	10,000–11,000	12,313.4986	123,134,986
	12	11,000–12,000	11,014.7083	110,147,083
	13	12,000–13,000	9,325.0156	93,250,156
	14	13,000–14,000	7,889.1111	78,891,111
	15	14,000–15,000	7,178.4603	71,784,603
	16	15,000–16,000	5,968.5024	59,685,024
	17	16,000–17,000	4,833.8288	48,338,288
	18	> 17,000	17,126.9114	171,269,114
Total			289,311.0484	2,893,110,484



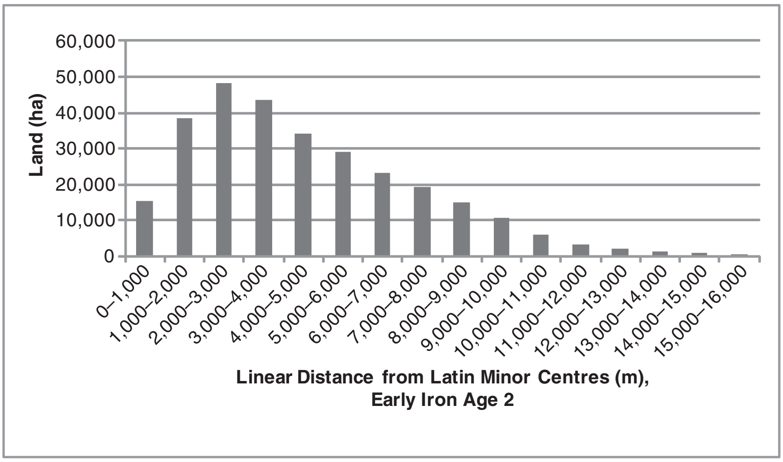
A51. Land distribution according to distance from Latin minor centres, Early Iron Age 1 Early.

	Class	Distance from Latin Minor Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	10,819.4304	108,194,304
	2	1,000–2,000	28,096.8940	280,968,940
	3	2,000–3,000	35,739.8739	357,398,739
	4	3,000–4,000	33,094.2604	330,942,604
	5	4,000–5,000	27,653.4269	276,534,269
	6	5,000–6,000	23,581.6025	235,816,025
	7	6,000–7,000	21,293.9298	212,939,298
	8	7,000–8,000	20,490.4069	204,904,069
	9	8,000–9,000	18,491.1104	184,911,104
	10	9,000–10,000	14,880.3421	148,803,421
	11	10,000–11,000	123,96.7083	123,967,083
	12	11,000–12,000	10,745.2638	107,452,638
	13	12,000–13,000	9,144.8936	91,448,936
	14	13,000–14,000	7,341.7754	73,417,754
	15	14,000–15,000	5,760.6799	57,606,799
	16	15,000–16,000	3,756.9401	37,569,401
	17	16,000–17,000	2,886.9988	288,699,88
	18	> 17,000	3,136.5112	31,365,112
Total			289,311.0484	2,893,110,484



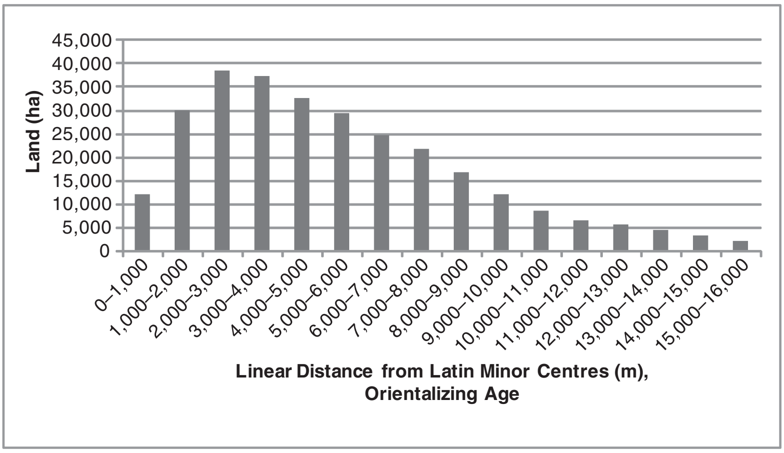
A52. Land distribution according to distance from Latin minor centres, Early Iron Age 1 Late, reorganised classes.

	Class	Distance from Latin Minor Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	15,127.2122	151,272,122
	2	1,000–2,000	38,409.9309	384,099,309
	3	2,000–3,000	48,187.5575	481,875,575
	4	3,000–4,000	43,496.4026	434,964,026
	5	4,000–5,000	34,205.4362	342,054,362
	6	5,000–6,000	28,843.1910	288,431,910
	7	6,000–7,000	23,294.0406	232,940,406
	8	7,000–8,000	19,136.3953	191,363,953
	9	8,000–9,000	14,899.4375	148,994,375
	10	9,000–10,000	10,732.3836	107,323,836
	11	10,000–11,000	5,762.5875	57,625,875
	12	11,000–12,000	2,951.9539	29,519,539
	13	12,000–13,000	2,102.8918	21,028,918
	14	13,000–14,000	1,260.3328	12,603,328
	15	14,000–15,000	803.0333	8,030,333
	16	15,000–16,000	98.2619	982,619
Total			289,311.0485	2,893,110,485



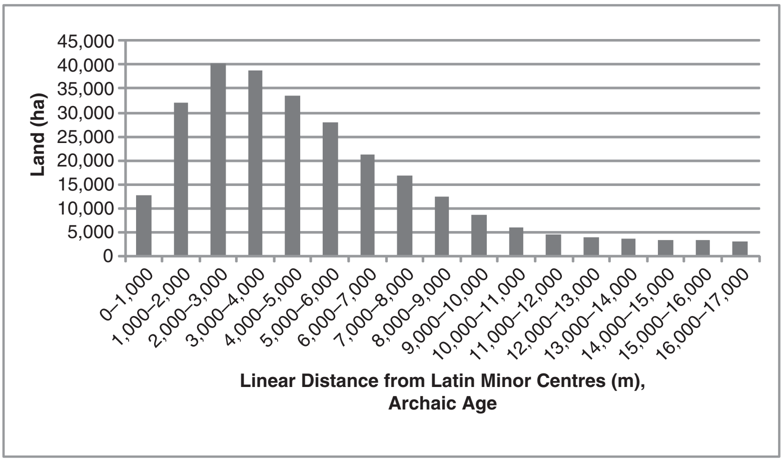
A53. Land distribution according to distance from Latin minor centres, Early Iron Age 2.

	Class	Distance from Latin Minor Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	12,030.0558	120,300,558
	2	1,000–2,000	30,025.8349	300,258,349
	3	2,000–3,000	38,563.0802	385,630,802
	4	3,000–4,000	37,497.7108	374,977,108
	5	4,000–5,000	32,717.2942	327,172,942
	6	5,000–6,000	29,265.7463	292,657,463
	7	6,000–7,000	24,654.0881	246,540,881
	8	7,000–8,000	21,712.8315	217,128,315
	9	8,000–9,000	16,617.7021	166,177,021
	10	9,000–10,000	12,095.5386	120,955,386
	11	10,000–11,000	8,623.0709	86,230,709
	12	11,000–12,000	6,547.9828	65,479,828
	13	12,000–13,000	5,453.9811	54,539,811
	14	13,000–14,000	4,328.8314	43,288,314
	15	14,000–15,000	3,288.7998	32,887,998
	16	15,000–16,000	2,100.6013	21,006,013
	17	16,000–17,000	1,602.3454	16,023,454
	18	> 17,000	2,185.5533	21,855,533
Total			289,311.0484	2,893,110,484



A54. Land distribution according to distance from Latin minor centres, Orientalizing Age.

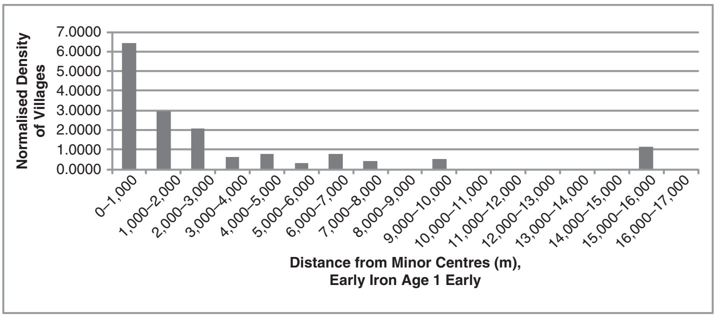
	Class	Distance from Latin Minor Centres (m)	Area (ha)	Area (m^2)
	1	0–1,000	12,663.6628	126,636,627.7762
	2	1,000–2,000	31,916.1845	319,161,845.1237
	3	2,000–3,000	40,314.8423	403,148,423.1668
	4	3,000–4,000	38,799.3301	387,993,300.6802
	5	4,000–5,000	33,642.3940	336,423,940.1950
	6	5,000–6,000	28,039.2145	280,392,144.5004
	7	6,000–7,000	21,050.4386	210,504,386.3055
	8	7,000–8,000	16,902.0824	169,020,823.8097
	9	8,000–9,000	12,446.1353	124,461,352.7166
	10	9,000–10,000	8,629.0847	86,290,847.2157
	11	10,000–11,000	5,754.1954	57,541,954.1742
	12	11,000–12,000	4,440.1757	44,401,756.5236
	13	12,000–13,000	3,751.7432	37,517,431.9336
	14	13,000–14,000	3,492.8213	34,928,213.1168
	15	14,000–15,000	3,289.5772	32,895,771.6512
	16	15,000–16,000	3,096.8715	30,968,714.5994
	17	16,000–17,000	2,819.2456	28,192,455.6029
	18	> 17,000	18,263.0495	182,630,495
Total			289,311.0484	2,893,110,484



A55. Land distribution according to distance from Latin minor centres, Archaic Age.

Distribution According to Linear Distance from Minor Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m^2)	Area (ha)	Distance from Minor Centres (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction	Distance from Minor Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	9	96,079,319.3707	9,607.9319	0–1,000	0.0009	0.0332	0.2143	0–1,000	6.4525
	11	257,546,694.4821	25,754.6694	1,000–2,000	0.0004	0.0890	0.2619	1,000–2,000	2.9421
	10	333,890,178.7873	33,389.0179	2,000–3,000	0.0003	0.1154	0.2381	2,000–3,000	2.0631
	3	320,325,703.4457	32,032.5703	3,000–4,000	0.0001	0.1107	0.0714	3,000–4,000	0.6451
	3	272,950,556.1382	27,295.0556	4,000–5,000	0.0001	0.0943	0.0714	4,000–5,000	0.7571
	1	218,191,782.7431	21,819.1783	5,000–6,000	0.0000	0.0754	0.0238	5,000–6,000	0.3157
	2	182,629,372.1071	18,262.9372	6,000–7,000	0.0001	0.0631	0.0476	6,000–7,000	0.7544
	1	168,390,167.8800	16,839.0168	7,000–8,000	0.0001	0.0582	0.0238	7,000–8,000	0.4091
		150,625,119.5800	15,062.5120	8,000–9,000	0.0000	0.0521	0.0000	8,000–9,000	0.0000
	1	135,981,223.3700	13,598.1223	9,000–10,000	0.0001	0.0470	0.0238	9,000–10,000	0.5066
		123,134,986.3400	12,313.4986	10,000–11,000	0.0000	0.0426	0.0000	10,000–11,000	0.0000
		110,147,083.3363	11,014.7083	11,000–12,000	0.0000	0.0381	0.0000	11,000–12,000	0.0000
		93,250,155.9970	9,325.0156	12,000–13,000	0.0000	0.0322	0.0000	12,000–13,000	0.0000
		78,891,111.0270	7,889.1111	13,000–14,000	0.0000	0.0273	0.0000	13,000–14,000	0.0000
		71,784,603.2000	7,178.4603	14,000–15,000	0.0000	0.0248	0.0000	14,000–15,000	0.0000
	1	59,685,024.4450	5,968.5024	15,000–16,000	0.0002	0.0206	0.0238	15,000–16,000	1.1541
		48,338,287.6230	4,833.8288	16,000–17,000	0.0000	0.0167	0.0000	16,000–17,000	0.0000
		171,269,114.1275	17,126.9114	> 17,000	0.0000	0.0592	0.0000	> 17,000	0.0000
Total	42.0000		289,311.0484						

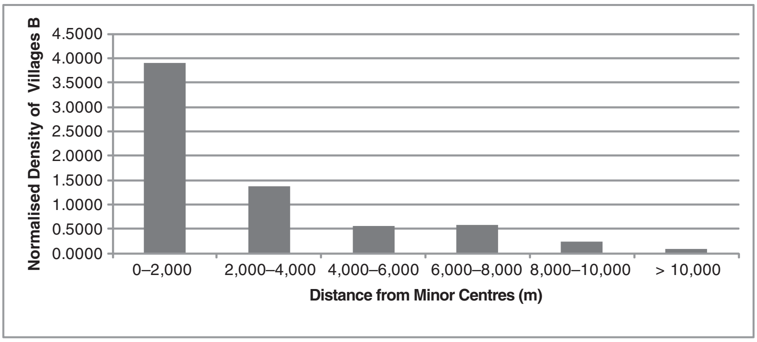


Chi–Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	9,607.9319	0.0332	0–1,000	9.0000	1.3948	1.1810	41.4673
	25,754.6694	0.0890	1,000–2,000	11.0000	3.7389	1.9336	14.1016
	33,389.0179	0.1154	2,000–3,000	10.0000	4.8472	2.2016	5.4778
	32,032.5703	0.1107	3,000–4,000	3.0000	4.6502	2.1564	0.5856
	27,295.0556	0.0943	4,000–5,000	3.0000	3.9625	1.9906	0.2338
	21,819.1783	0.0754	5,000–6,000	1.0000	3.1675	1.7798	1.4832
	18,262.9372	0.0631	6,000–7,000	2.0000	2.6513	1.6283	0.1600
	16,839.0168	0.0582	7,000–8,000	1.0000	2.4446	1.5635	0.8536
	15,062.5120	0.0521	8,000–9,000	0.0000	2.1867	1.4787	2.1867
	13,598.1223	0.0470	9,000–10,000	1.0000	1.9741	1.4050	0.4806
	12,313.4986	0.0426	10,000–11,000	0.0000	1.7876	1.3370	1.7876
	11,014.7083	0.0381	11,000–12,000	0.0000	1.5990	1.2645	1.5990
	9,325.0156	0.0322	12,000–13,000	0.0000	1.3537	1.1635	1.3537
	7,889.1111	0.0273	13,000–14,000	0.0000	1.1453	1.0702	1.1453
	7,178.4603	0.0248	14,000–15,000	0.0000	1.0421	1.0208	1.0421
	5,968.5024	0.0206	15,000–16,000	1.0000	0.8665	0.9308	0.0206
	4,833.8288	0.0167	16,000–17,000	0.0000	0.7017	0.8377	0.7017
	17,126.9114	0.0592	> 17,000	0.0000	2.4864	1.5768	2.4864
Total	289,311.0484			42.0000			
						Chi–Square	77.1667
						Chi–Sq. Prob.	**<0.0001**

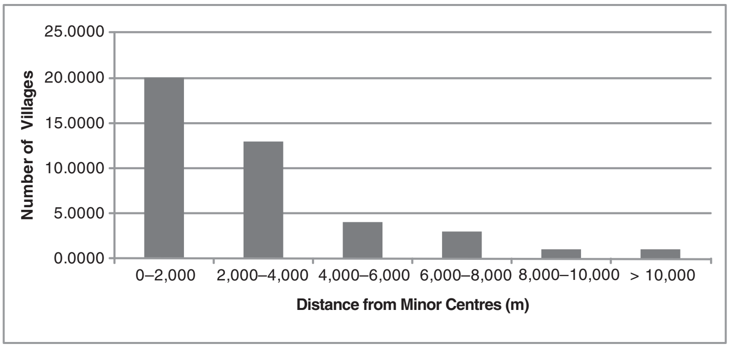
A56. Distribution of villages according to distance from minor centres, Early Iron Age 1 Early.

Distribution According to Reorganised Classes



Chi-Square Test

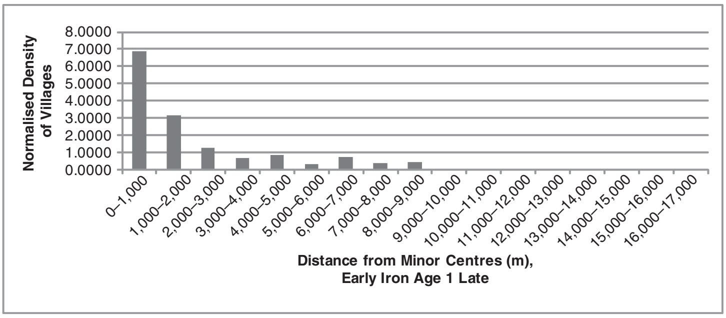
	Area (ha)	Area Fraction	Distance from Minor Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	35,362.6014	0.1222	0–2,000	20.0000	5.1337	2.2658	43.0505	3.8958
	65,421.5882	0.2261	2,000–4,000	13.0000	9.4974	3.0818	1.2917	1.3688
	49,114.2339	0.1698	4,000–6,000	4.0000	7.1300	2.6702	1.3741	0.5610
	35,101.9540	0.1213	6,000–8,000	3.0000	5.0958	2.2574	0.8620	0.5887
	28,660.6343	0.0991	8,000–10,000	1.0000	4.1607	2.0398	2.4011	0.2403
	75,650.0366	0.2615	> 10,000	1.0000	10.9823	3.3140	9.0734	0.0911
Total	289,311.0484			42.0000				
						Chi-Square	58.0528	
						Chi-Sq. Prob.	**<0.0001**	



A57. Distribution of villages according to distance from minor centres, Early Iron Age 1 Early, reorganised classes.

Distribution According to Linear Distance from Minor Centres (Fixed Buffer Zones of 1,000 m Each)

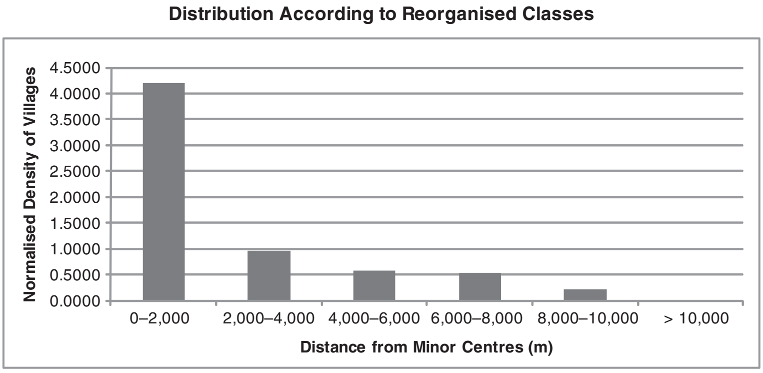
	No. of Sites	Area (m^2)	Area (ha)	Distance from Minor Centres (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction	Distance from Minor Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	10	108,194,304.4854	10,819.4304	0–1,000	0.0009	0.0374	0.2564	0–1,000	6.8564
	12	280,968,939.9090	28,096.8940	1,000–2,000	0.0004	0.0971	0.3077	1,000–2,000	3.1683
	6	357,398,739.4483	35,739.8739	2,000–3,000	0.0002	0.1235	0.1538	2,000–3,000	1.2454
	3	330,942,603.7607	33,094.2604	3,000–4,000	0.0001	0.1144	0.0769	3,000–4,000	0.6725
	3	276,534,268.5942	27,653.4269	4,000–5,000	0.0001	0.0956	0.0769	4,000–5,000	0.8048
	1	235,816,024.6962	23,581.6025	5,000–6,000	0.0000	0.0815	0.0256	5,000–6,000	0.3146
	2	212,939,298.2244	21,293.9298	6,000–7,000	0.0001	0.0736	0.0513	6,000–7,000	0.6967
	1	204,904,068.8730	20,490.4069	7,000–8,000	0.0000	0.0708	0.0256	7,000–8,000	0.3620
	1	184,911,103.5500	18,491.1104	8,000–9,000	0.0001	0.0639	0.0256	8,000–9,000	0.4012
		148,803,420.8400	14,880.3421	9,000 –10,000	0.0000	0.0514	0.0000	9,000 –10,000	0.0000
		123,967,082.6500	12,396.7083	10,000 –11,000	0.0000	0.0428	0.0000	10,000 –11,000	0.0000
		107,452,637.8200	10,745.2638	11,000–12,000	0.0000	0.0371	0.0000	11,000–12,000	0.0000
		91,448,936.1110	9,144.8936	12,000–13,000	0.0000	0.0316	0.0000	12,000–13,000	0.0000
		73,417,754.1050	7,341.7754	13,000–14,000	0.0000	0.0254	0.0000	13,000–14,000	0.0000
		57,606,798.7290	5,760.6799	14,000–15,000	0.0000	0.0199	0.0000	14,000–15,000	0.0000
		37,569,401.4540	3,756.9401	15,000–16,000	0.0000	0.0130	0.0000	15,000–16,000	0.0000
		28,869,988.2979	2,886.9988	16,000–17,000	0.0000	0.0100	0.0000	16,000–17,000	0.0000
		31,365,112.4519	3,136.5112	> 17,000	0.0000	0.0108	0.0000	> 17,000	0.0000
Total	39.0000		289,311.0484						



Chi-Square Test

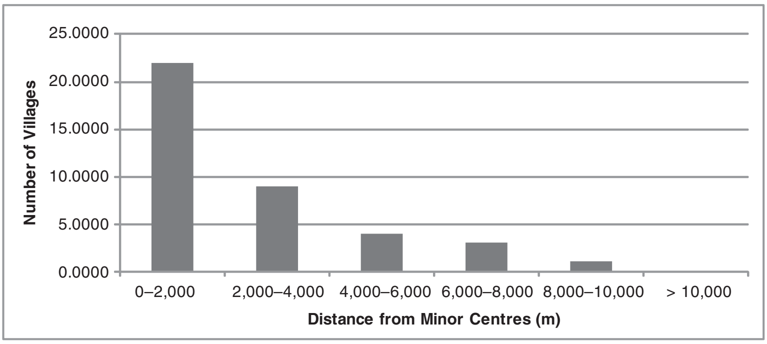
	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	10,819.4304	0.0374	0–1,000	10.0000	1.4585	1.2077	50.0225
	28,096.8940	0.0971	1,000–2,000	12.0000	3.7875	1.9462	17.8069
	35,739.8739	0.1235	2,000–3,000	6.0000	4.8178	2.1950	0.2901
	33,094.2604	0.1144	3,000–4,000	3.0000	4.4612	2.1122	0.4786
	27,653.4269	0.0956	4,000–5,000	3.0000	3.7278	1.9307	0.1421
	23,581.6025	0.0815	5,000–6,000	1.0000	3.1789	1.7829	1.4934
	21,293.9298	0.0736	6,000–7,000	2.0000	2.8705	1.6943	0.2640
	20,490.4069	0.0708	7,000–8,000	1.0000	2.7622	1.6620	1.1242
	18,491.1104	0.0639	8,000–9,000	1.0000	2.4927	1.5788	0.8938
	14,880.3421	0.0514	9,000 –10,000	0.0000	2.0059	1.4163	2.0059
	12,396.7083	0.0428	10,000 –11,000	0.0000	1.6711	1.2927	1.6711
	10,745.2638	0.0371	11,000–12,000	0.0000	1.4485	1.2035	1.4485
	9,144.8936	0.0316	12,000–13,000	0.0000	1.2328	1.1103	1.2328
	7,341.7754	0.0254	13,000–14,000	0.0000	0.9897	0.9948	0.9897
	5,760.6799	0.0199	14,000–15,000	0.0000	0.7766	0.8812	0.7766
	3,756.9401	0.0130	15,000–16,000	0.0000	0.5064	0.7117	0.5064
	2,886.9988	0.0100	16,000–17,000	0.0000	0.3892	0.6238	0.3892
	3,136.5112	0.0108	> 17,000	0.0000	0.4228	0.6502	0.4228
Total	289,311.0484			39.0000			
						Chi-Square	81.9585
						Chi-Sq. Prob.	<0.0001

A58. Distribution of villages according to distance from minor centres, Early Iron Age 1 Late.



Chi-Square Test

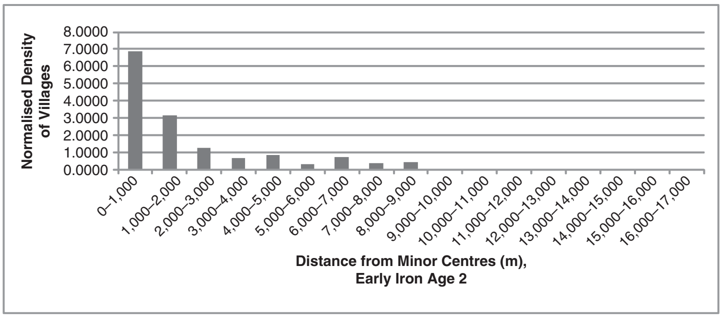
	Area (ha)	Area Fraction	Distance from Minor Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	38,916.3244	0.1345	0–2,000	22.0000	5.2460	2.2904	53.5061	4.1936
	68,834.1343	0.2379	2,000–4,000	9.0000	9.2790	3.0462	0.0084	0.9699
	51,235.0293	0.1771	4,000–6,000	4.0000	6.9066	2.6280	1.2232	0.5792
	41,784.3367	0.1444	6,000–8,000	3.0000	5.6327	2.3733	1.2305	0.5326
	33,371.4524	0.1153	8,000–10,000	1.0000	4.4986	2.1210	2.7209	0.2223
	55,169.7712	0.1907	> 10,000	0.0000	7.4371	2.7271	7.4371	0.0000
Total	289,311.0484			39.0000				
						Chi-Square	66.1262	
						Chi-Sq. Prob.	**<0.0001**	



A59. Distribution of villages according to distance from minor centres, Early Iron Age 1 Late, reorganised classes.

Distribution According to Linear Distance from Minor Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m^2)	Area (ha)	Distance from Minor Centres (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction	Distance from Minor Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	10	108,194,304.4854	10,819.4304	0–1,000	0.0009	0.0374	0.2564	0–1,000	6.8564
	12	280,968,939.9090	28,096.8940	1,000–2,000	0.0004	0.0971	0.3077	1,000–2,000	3.1683
	6	357,398,739.4483	35,739.8739	2,000–3,000	0.0002	0.1235	0.1538	2,000–3,000	1.2454
	3	330,942,603.7607	33,094.2604	3,000–4,000	0.0001	0.1144	0.0769	3,000–4,000	0.6725
	3	276,534,268.5942	27,653.4269	4,000–5,000	0.0001	0.0956	0.0769	4,000–5,000	0.8048
	1	235,816,024.6962	23,581.6025	5,000–6,000	0.0000	0.0815	0.0256	5,000–6,000	0.3146
	2	212,939,298.2244	21,293.9298	6,000–7,000	0.0001	0.0736	0.0513	6,000–7,000	0.6967
	1	204,904,068.8730	20,490.4069	7,000–8,000	0.0000	0.0708	0.0256	7,000–8,000	0.3620
	1	184,911,103.5500	18,491.1104	8,000–9,000	0.0001	0.0639	0.0256	8,000–9,000	0.4012
		148,803,420.8400	14,880.3421	9,000– 10,000	0.0000	0.0514	0.0000	9,000–10,000	0.0000
		123,967,082.6500	12,396.7083	10,000–11,000	0.0000	0.0428	0.0000	10,000–11,000	0.0000
		107,452,637.8200	10,745.2638	11,000–12,000	0.0000	0.0371	0.0000	11,000–12,000	0.0000
		91,448,936.1110	9,144.8936	12,000–13,000	0.0000	0.0316	0.0000	12,000–13,000	0.0000
		73,417,754.1050	7,341.7754	13,000–14,000	0.0000	0.0254	0.0000	13,000–14,000	0.0000
		57,606,798.7290	5,760.6799	14,000–15,000	0.0000	0.0199	0.0000	14,000–15,000	0.0000
		37,569,401.4540	3,756.9401	15,000–16,000	0.0000	0.0130	0.0000	15,000–16,000	0.0000
		28,869,988.2979	2,886.9988	16,000–17,000	0.0000	0.0100	0.0000	16,000–17,000	0.0000
		31,365,112.4519	3,136.5112	> 17,000	0.0000	0.0108	0.0000	> 17,000 m	0.0000
Total	39.0000		289,311.0484						

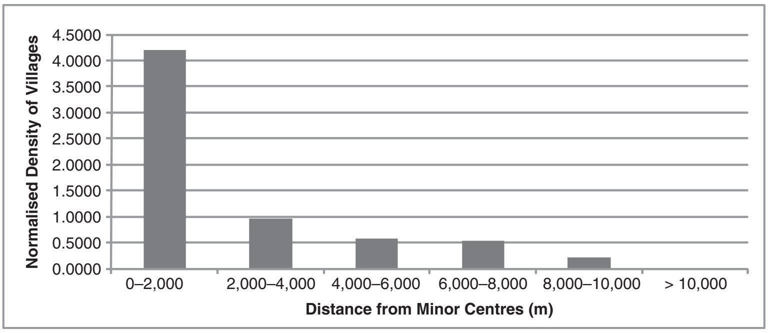


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	10,,819.4304	0.0378	0–1,000	10.0000	1.4745	1.2143	49.2951
	28096.8940	0.0982	1,000–2,000	12.0000	3.8291	1.9568	17.4362
	35,,739.8739	0.1249	2,000–3,000	6.0000	4.8706	2.2070	0.2619
	33,094.2604	0.1156	3,000–4,000	3.0000	4.5101	2.1237	0.5056
	27,653.4269	0.0966	4,000–5,000	3.0000	3.7686	1.9413	0.1568
	23,581.6025	0.0824	5,000–6,000	1.0000	3.2137	1.7927	1.5249
	21,293.9298	0.0744	6,000–7,000	2.0000	2.9019	1.7035	0.2803
	20,490.4069	0.0716	7,000–8,000	1.0000	2.7924	1.6711	1.1506
	18,491.1104	0.0646	8,000–9,000	1.0000	2.5200	1.5874	0.9168
	14,880.3421	0.0520	9,000–10,000	0.0000	2.0279	1.4240	2.0279
	12,396.7083	0.0433	10,000–11,000	0.0000	1.6894	1.2998	1.6894
	10,745.2638	0.0375	11,000–12,000	0.0000	1.4644	1.2101	1.4644
	9,144.8936	0.0320	12,000–13,000	0.0000	1.2463	1.1164	1.2463
	7,341.7754	0.0257	13,000–14,000	0.0000	1.0005	1.0003	1.0005
	5,760.6799	0.0201	14,000–15,000	0.0000	0.7851	0.8860	0.7851
	3,756.9401	0.0131	15,000–16,000	0.0000	0.5120	0.7155	0.5120
	2,886.9988	0.0101	16,000–17,000	0.0000	0.3934	0.6272	0.3934
	3,136.5112	0.0110	> 17,000	0.0000	0.4274	0.6538	0.4274
Total	286,174.5372			39.0000			

Chi-Square	81.0746
Chi-Sq. Prob.	**<0.0001**

A60. Distribution of villages according to distance from minor centres, Early Iron Age 2.

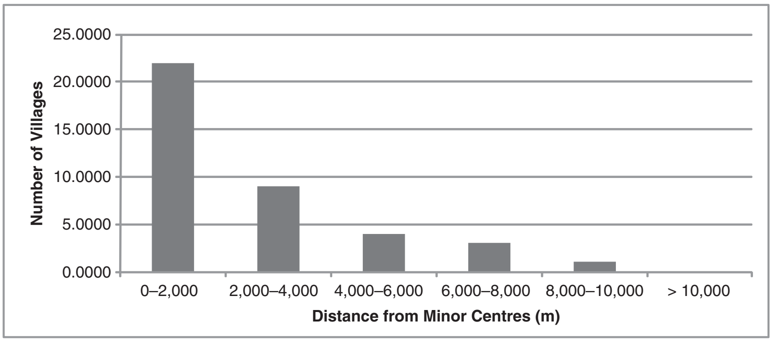


Distribution According to Reorganised Classes

Chi–Square Test

	Area (ha)	Area Fraction	Distance from Minor Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	38,916.3244	0.1345	0–2,000	22.0000	5.2460	2.2904	53.5061	4.1936
	68,834.1343	0.2379	2,000–4,000	9.0000	9.2790	3.0462	0.0084	0.9699
	51,235.0293	0.1771	4,000–6,000	4.0000	6.9066	2.6280	1.2232	0.5792
	41,784.3367	0.1444	6,000–8,000	3.0000	5.6327	2.3733	1.2305	0.5326
	33,371.4524	0.1153	8,000–10,000	1.0000	4.4986	2.1210	2.7209	0.2223
	55,169.7712	0.1907	> 10,000	0.0000	7.4371	2.7271	7.4371	0.0000
Total	289,311.0484			39.0000				

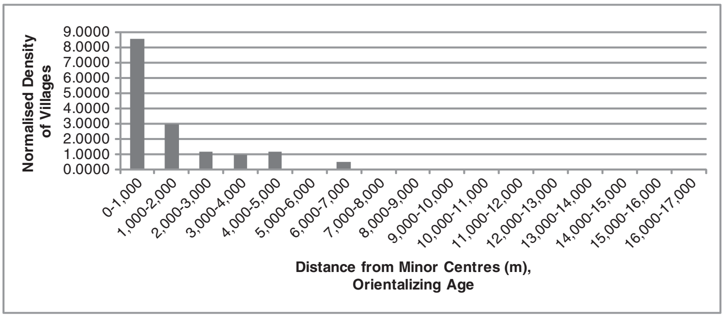
Chi–Square	66.1262
Chi–Sq. Prob.	**<0.0001**



A61. Distribution of villages according to distance from minor centres, Early Iron Age 2, reorganised classes.

Distribution According to Linear Distance from Minor Centres (Fixed Buffer Zones of 1,000 m Each)

	No. of Sites	Area (m²)	Area (ha)	Distance from Minor Centres (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction	Distance from Minor Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	9	108,194,304.4854	10,819.4304	0–1,000	0.0008	0.0378	0.3214	0–1,000	8.5018
	8	280,968,939.9090	28,096.8940	1,000–2,000	0.0003	0.0982	0.2857	1,000–2,000	2.9101
	4	357,398,739.4483	35,739.8739	2,000–3,000	0.0001	0.1249	0.1429	2,000–3,000	1.1439
	3	330,942,603.7607	33,094.2604	3,000–4,000	0.0001	0.1156	0.1071	3,000–4,000	0.9265
	3	276,534,268.5942	27,653.4269	4,000–5,000	0.0001	0.0966	0.1071	4,000–5,000	1.1088
		235,816,024.6962	23,581.6025	5,000–6,000	0.0000	0.0824	0.0000	5,000–6,000	0.0000
	1	212,939,298.2244	21,293.9298	6,000–7,000	0.0000	0.0744	0.0357	6,000–7,000	0.4800
		204,904,068.8730	20,490.4069	7,000–8,000	0.0000	0.0716	0.0000	7,000–8,000	0.0000
		184,911,103.5500	18,491.1104	8,000–9,000	0.0000	0.0646	0.0000	8,000–9,000	0.0000
		148,803,420.8400	14,880.3421	9,000–10,000	0.0000	0.0520	0.0000	9,000–10,000	0.0000
		123,967,082.6500	12,396.7083	10,000–11,000	0.0000	0.0433	0.0000	10,000–11,000	0.0000
		107,452,637.8200	10,745.2638	11,000–12,000	0.0000	0.0375	0.0000	11,000–12,000	0.0000
		91,448,936.1110	9,144.8936	12,000–13,000	0.0000	0.0320	0.0000	12,000–13,000	0.0000
		73,417,754.1050	7,341.7754	13,000–14,000	0.0000	0.0257	0.0000	13,000–14,000	0.0000
		57,606,798.7290	5,760.6799	14,000–15,000	0.0000	0.0201	0.0000	14,000–15,000	0.0000
		37,569,401.4540	3,756.9401	15,000–16,000	0.0000	0.0131	0.0000	15,000–16,000	0.0000
		28,869,988.2979	2,886.9988	16,000–17,000	0.0000	0.0101	0.0000	16,000–17,000	0.0000
		31,365,112.4519	3,136.5112	>17,000	0.0000	0.0110	0.0000	> 17,000	0.0000
Total	28.0000		286,174.5372						

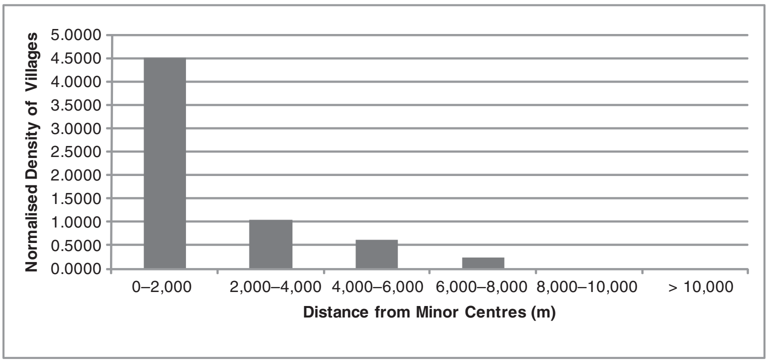


Chi-Square Test

	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	10,819.4304	0.0374	0–1,000	9.0000	1.0471	1.0233	60.4020
	28,096.8940	0.0971	1,000–2,000	8.0000	2.7193	1.6490	10.2550
	35,739.8739	0.1235	2,000–3,000	4.0000	3.4590	1.8598	0.0846
	33,094.2604	0.1144	3,000–4,000	3.0000	3.2029	1.7897	0.0129
	27,653.4269	0.0956	4,000–5,000	3.0000	2.6763	1.6360	0.0391
	23,581.6025	0.0815	5,000–6,000	0.0000	2.2823	1.5107	2.2823
	21,293.9298	0.0736	6,000–7,000	1.0000	2.0609	1.4356	0.5461
	20,490.4069	0.0708	7,000–8,000	0.0000	1.9831	1.4082	1.9831
	18,491.1104	0.0639	8,000–9,000	0.0000	1.7896	1.3378	1.7896
	14,880.3421	0.0514	9,000–10,000	0.0000	1.4401	1.2001	1.4401
	12,396.7083	0.0428	10,000–11,000	0.0000	1.1998	1.0953	1.1998
	10,745.2638	0.0371	11,000–12,000	0.0000	1.0399	1.0198	1.0399
	9,144.8936	0.0316	12,000–13,000	0.0000	0.8851	0.9408	0.8851
	7,341.7754	0.0254	13,000–14,000	0.0000	0.7105	0.8429	0.7105
	5,760.6799	0.0199	14,000–15,000	0.0000	0.5575	0.7467	0.5575
	3,756.9401	0.0130	15,000–16,000	0.0000	0.3636	0.6030	0.3636
	2,886.9988	0.0100	16,000–17,000	0.0000	0.2794	0.5286	0.2794
	3,136.5112	0.0108	> 17,000	0.0000	0.3036	0.5510	0.3036
Total	289,311.0484			28.0000			
						Chi-Square	84.1743
						Chi-Sq. Prob.	**<0.0001**

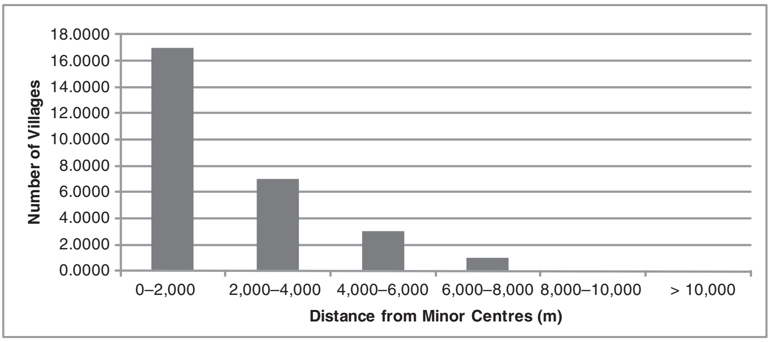
A62. Distribution of villages according to distance from minor centres, Orientalizing Age.

Distribution According to Reorganised Classes



Chi-Square Test

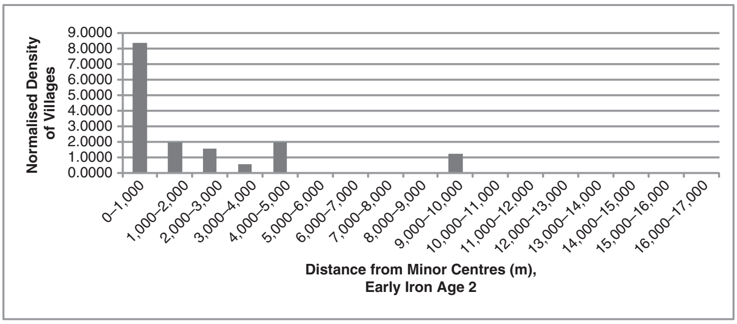
	Area (ha)	Area Fraction	Distance from Minor Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	38,916.3244	0.1345	0–2,000	17.0000	3.7664	1.9407	46.4978	4.5136
	68,834.1343	0.2379	2,000–4,000	7.0000	6.6619	2.5811	0.0172	1.0508
	51,235.0293	0.1771	4,000–6,000	3.0000	4.9586	2.2268	0.7736	0.6050
	41,784.3367	0.1444	6,000–8,000	1.0000	4.0440	2.0110	2.2912	0.2473
	33,371.4524	0.1153	8,000–10,000	0.0000	3.2297	1.7971	3.2297	0.0000
	55,169.7712	0.1907	> 10,000	0.0000	5.3394	2.3107	5.3394	0.0000
Total	289,311.0484			28.0000				
						Chi-Square.	58.1490	
						Chi-Sq. Prob.	**<0.0001**	



A63. Distribution of villages according to distance from minor centres, Orientalizing Age, reorganised classes.

Distribution According to Linear Distance from Minor Centres (Fixed Buffer Zones of 1,000 m Each)

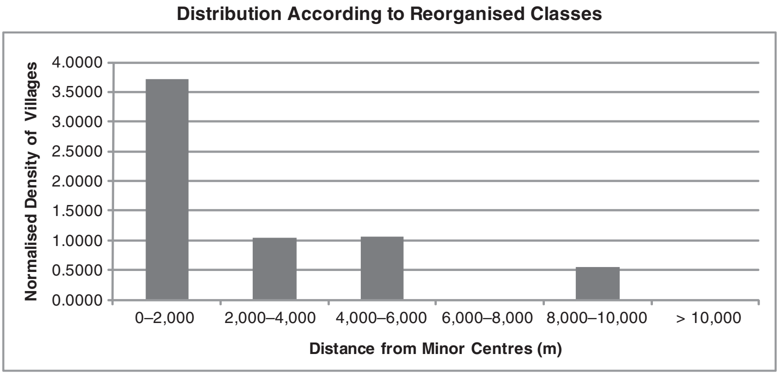
	No. of Sites	Area (m^2)	Area (ha)	Distance from Minor Centres (m)	Density of Villages (Sites/ ha)	Land Fraction	Site Fraction	Distance from Minor Centres (m)	Normalised Density (Site Fraction/ Land Fraction)
	5	108,194,304.4854	10,819.4304	0–1,000	0.0005	0.0374	0.3125	0–1,000	8.3562
	3	280,968,939.9090	28,096.8940	1,000–2,000	0.0001	0.0971	0.1875	1,000–2,000	1.9307
	3	357,398,739.4483	35,739.8739	2,000–3,000	0.0001	0.1235	0.1875	2,000–3,000	1.5178
	1	330,942,603.7607	33,094.2604	3,000–4,000	0.0000	0.1144	0.0625	3,000–4,000	0.5464
	3	276,534,268.5942	27,653.4269	4,000–5,000	0.0001	0.0956	0.1875	4,000–5,000	1.9616
		235,816,024.6962	23,581.6025	5,000–6,000	0.0000	0.0815	0.0000	5,000–6,000	0.0000
		212,939,298.2244	21,293.9298	6,000–7,000	0.0000	0.0736	0.0000	6,000–7,000	0.0000
		204,904,068.8730	20,490.4069	7,000–8,000	0.0000	0.0708	0.0000	7,000–8,000	0.0000
		184,911,103.5500	18,491.1104	8,000–9,000	0.0000	0.0639	0.0000	8,000–9,000	0.0000
	1	148,803,420.8400	14,880.3421	9,000–10,000	0.0001	0.0514	0.0625	9,000–10,000	1.2152
		123,967,082.6500	12,396.7083	10,000–11,000	0.0000	0.0428	0.0000	10,000–11,000	0.0000
		107,452,637.8200	10,745.2638	11,000–12,000	0.0000	0.0371	0.0000	11,000–12,000	0.0000
		91,448,936.1110	9,144.8936	12,000–13,000	0.0000	0.0316	0.0000	12,000–13,000	0.0000
		73,417,754.1050	7,341.7754	13,000–14,000	0.0000	0.0254	0.0000	13,000–14,000	0.0000
		57,606,798.7290	5,760.6799	14,000–15,000	0.0000	0.0199	0.0000	14,000–15,000	0.0000
		37,569,401.4540	3,756.9401	15,000–16,000	0.0000	0.0130	0.0000	15,000–16,000	0.0000
		28,869,988.2979	2,886.9988	16,000–17,000	0.0000	0.0100	0.0000	16,000–17,000	0.0000
		31,365,112.4519	3,136.5112	> 17,000	0.0000	0.0108	0.0000	> 17,000	0.0000
Total	16.0000		289,311.0484						



Chi-Square Test

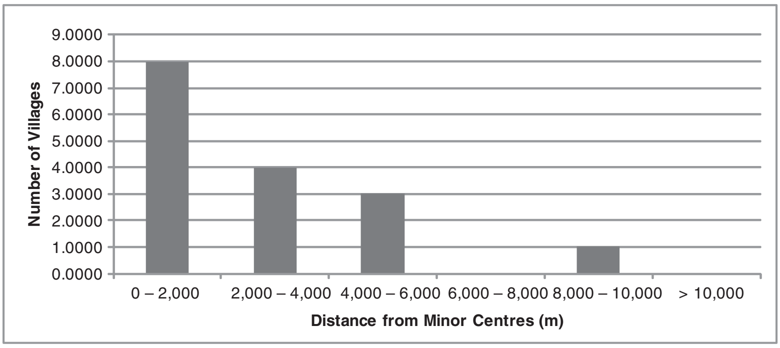
	Area (ha)	Area Fraction	Distance from Primary Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation	
	10,819.4304	0.0378	0-1,000	5.0000	0.6049	0.7778	31.9331
	28,096.8940	0.0982	1,000–2,000	3.0000	1.5709	1.2534	1.3001
	35,739.8739	0.1249	2,000–3,000	3.0000	1.9982	1.4136	0.5022
	33,094.2604	0.1156	3,000–4,000	1.0000	1.8503	1.3603	0.3908
	27,653.4269	0.0966	4,000–5,000	3.0000	1.5461	1.2434	1.3672
	23,581.6025	0.0824	5,000–6,000	0.0000	1.3184	1.1482	1.3184
	21,293.9298	0.0744	6,000–7,000	0.0000	1.1905	1.0911	1.1905
	20,490.4069	0.0716	7,000–8,000	0.0000	1.1456	1.0703	1.1456
	18,491.1104	0.0646	8,000–9,000	0.0000	1.0338	1.0168	1.0338
	14,880.3421	0.0520	9,000 –10,000	1.0000	0.8320	0.9121	0.0339
	12,396.7083	0.0433	10,000 –11,000	0.0000	0.6931	0.8325	0.6931
	10,745.2638	0.0375	11,000–12,000	0.0000	0.6008	0.7751	0.6008
	9,144.8936	0.0320	12,000–13,000	0.0000	0.5113	0.7150	0.5113
	7,341.7754	0.0257	13,000–14,000	0.0000	0.4105	0.6407	0.4105
	5,760.6799	0.0201	14,000–15,000	0.0000	0.3221	0.5675	0.3221
	3,756.9401	0.0131	15,000–16,000	0.0000	0.2101	0.4583	0.2101
	2,886.9988	0.0101	16,000–17,000	0.0000	0.1614	0.4018	0.1614
	3,136.5112	0.0110	> 17,000	0.0000	0.1754	0.4188	0.1754
Total	286,174.5372			16.0000			
						Chi-Square.	43.3003
						Chi-Sq. Prob.	0.0004

A64. Distribution of villages according to distance from minor centres, Archaic Age.



Chi-Square Test

	Area (ha)	Area Fraction	Distance from Minor Centres (m)	No. of Sites	Expected Mean Value Variances	Expected Standard Deviation		Normalised Density (Site Fraction/ Land Fraction)
	38,916.3244	0.1345	0 – 2,000	8.0000	2.1522	1.4670	15.8889	3.7171
	68,834.1343	0.2379	2,000– 4,000	4.0000	3.8068	1.9511	0.0098	1.0508
	51,235.0293	0.1771	4,000– 6,000	3.0000	2.8335	1.6833	0.0098	1.0588
	41,784.3367	0.1444	6,000– 8,000	0.0000	2.3108	1.5201	2.3108	0.0000
	33,371.4524	0.1153	8,000– 10,000	1.0000	1.8456	1.3585	0.3874	0.5418
	55,169.7712	0.1907	> 10,000	0.0000	3.0511	1.7467	3.0511	0.0000
Total	289,311.0484			16.0000				
						Chi-Square	21.6579	
						Chi-Sq. Prob.	**0.0006**	



A65. Distribution of villages according to distance from minor centres, Archaic Age, reorganised classes.

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NOTES

INTRODUCTION

1 Ampolo et al. 1980.

2 See, e.g., Ampolo et al. 1980, p. 169; Ampolo 1983; Ampolo 1988c, pp. 163–64; Colonna 1988a; Musti 1990, pp. 10–11; Quilici 1990, pp. 37–44; Torelli 1997b, pp. 106–18; Stoddart & Spivey 1990, pp. 52–53; Cornell 1995, pp. 92–103; Ross Holloway 1996, pp. 170–71; Smith 1996, pp. 98–99; Damgaard Andersen 1997; and Attema 1997. More recently see Cornell 2000a, p. 209; Torelli 2000, pp. 194–96; Nijboer 2004, pp. 143–50; and Rasmussen 2005, pp. 72–73.

3 Thus the link between political institutions and urban structures is more visible than in the case of huts or structures made of wood and perishable materials; see Section 3.2 and Bonghi Iovino 2005, p. 27.

4 For more details and references about these archaeological contexts see 'Urban Rome' in Section 3.1.

5 On Etruscan Archaic architecture in general see Colonna 1986; on urban sanctuaries see in particular Colonna 1985, pp. 67–97; and on sacred Etruscan architecture see Colonna 2006. While a comprehensive study of Etruscan fortifications is not yet available, some examples are listed in Cifani 1997a, pp. 363–64, and recent discoveries have been reviewed in Fontaine 2002–2003. On Archaic architecture in Rome and Latium vetus see Cristofani 1990 and Cifani 2008 (esp. pp. 255–64 on fortifications and 287–98 on sanctuaries); on fortifications see also Cifani 1997a.

6 Carandini 2007, pp. 44–77; for further details and references see 'Urban Rome' in Section 3.1.

7 Carandini 2007, esp. p. 13.

8 See, e.g., Ampolo et al. 1980, esp. pp. 113, 169, even though previous developments leading to social differentiation are not fully denied; see also Strom 1971; Pallottino 1984, pp. 213, 307; Pallottino 1991, pp. 55–56; Harris 1989; and Rathje 1984, 1990, 1995. While admitting important pre-existent local developments (settlement centralisation, the emergence of embryonic social differentiation and craft specialisation), Ridgway 1992, pp. 129–44, suggests that the impact of external influences should not be underestimated. See also various contributions in Damgaard Andersen et al. 1997. Forsythe 2005, pp. 31–58, emphasised the 'extraordinary impact' that Phoenician and Greek settlements and commercial activity in the Mediterranean had on the people of Italy. Rasmussen 2005, pp. 72–78, 82–83, seems to agree with the 'exogenous' point of view, but only implicitly. More cautiously, Cornell 1995, pp. 87–92, and Smith 2005, p. 102, while emphasising the importance of external influences, also acknowledge the existence of significant independent local trends towards higher complexity. Finally, as pointed out by Guidi 2006, it ought to be noted that, outside Italy, the diffusionist idea seems to have been adopted by many pre-historians, e.g., Champion et al. 1984, p. 259, and Sherratt 1993, p. 93.

9 See, e.g., di Gennaro 1986; di Gennaro & Peroni 1986; Peroni 1989, 2000; Bietti Sestieri 1997, but only with reference to Etruria, from which urbanisation would have passed to nearby Latium vetus; Stoddart & Spivey 1990, pp. 40–52; Barker & Rasmussen 1998, pp. 83–84; di Gennaro & Guidi 2000; Guidi 1998, 2006; and Pacciarelli 2001.

10 See, e.g., Damgaard Andersen 1997; Rasmussen 2005; and Sherratt 1993, p. 93.

11 Carandini 2007, p. 13.

12 See, e.g., Cunliffe 2008 and Hodos 2009.

13 See, e.g., Bintliff 1994, 1999a, 2000, 2002b, 2006, 2007 and 'The Socio-Ecological Model of Urbanisation Developed by John Bintliff' in Section 1.2.

14 Shelach 1999, p. 4.

15 Shelach 1999.

16 For bibliographical references see note 13 in this chapter and Section 1.2.

17 As will be shown in more detail in Section 7.4, the network model has been used as a metaphor (Malkin 2003) to explain the birth of the Greek city-state and identity as the product of reciprocity and interactions between mainland and colonial centres; it had already been suggested, but not fully explored (Wilkins 1991), with reference to middle Tyrrhenian Italy. However, it is only in the past decade that concepts such as 'connectivity' and 'network' have been widely adopted in the place of old 'centre-periphery' theories and that the full potential of social network analysis, is being explored in archaeological research. For examples of such applications and further references to previous studies see Brughmans 2010, with a study on Roman provincial pottery, and Fulminante 2012, with an application to Latin proto-urban centres.

18. As shown by Riva & Vella 2006, pp. 4–10, the idea of an orientalisation (from Assyria, Phoenicia and Egypt) of Greek and Etruscan art originated with the discovery of 'Phoenician bowls' in princely burials in central Italy by the middle of the nineteenth century. According to these scholars, the idea of 'diffusion' has since dominated scholarship for more than a century and its influence has not yet abated.

19 Carandini 2007.

20 See Horden & Purcell 2000; Purcell 2005; Cunliffe 2008; Hodos 2009; and further references in Section 7.4.

21 Thomas 1991.

22 Renfrew & Cherry 1986.

23 Morris 2003.

24 Horden & Purcell 2000.

25 Malkin 2003; Cunliffe 2008.

ONE. URBANISATION AND STATE FORMATION IN MIDDLE TYRRHENIAN ITALY: HISTORICAL QUESTIONS AND THEORETICAL MODELS

1 Compare Section 2.2.

2 Ward Perkins 1961.

3 Ward Perkins 1961; Torelli 1986, p. 44; Ampolo 1980b; Bietti Sestieri 1981, pp. 254–255; Bartoloni 1989, pp. 106–108; and, more recently, Rasmussen 2005, pp. 73–74.

4 See Peroni 2000 and cf. note 5, this chapter.

5 Müller-Karpe 1962; di Gennaro 1986; di Gennaro & Peroni 1986; Stoddart 1990, p. 43; Peroni 1989, 2000; Bietti Sestieri 1997; Barker & Rasmussen 1998, p. 84; di Gennaro & Guidi 2000; Guidi 1998, 2006; Pacciarelli 2001.

6 Henceforth abbreviated as ha.

7 See, e.g., di Gennaro 1986; di Gennaro & Peroni 1986; di Gennaro & Guidi 2000; Guidi 1998, 2006; Peroni 2000; and Pacciarelli 2001.

8 See, e.g., di Gennaro 1986; di Gennaro & Peroni 1986; Stoddart 1990, p. 43; Peroni 1989, 2000; Bietti Sestieri 1997; Barker & Rasmussen 1998, p. 84; di Gennaro & Guidi 2000; Guidi 1998, 2006; Peroni 2000; and Pacciarelli 2001.

9 With reference to Etruria see, e.g., surveys conducted in Veii (Guaitoli 1981d, pp. 79–82), Caere (Merlino 1990, esp. pp. 7–11), Vulci (Pacciarelli 1991a, 2001) and Tarquinia (Mandolesi 1999); in Latium vetus, see Gabii (Guaitoli 1981a, b), Ardea (Morselli & Tortorici 1981a), Lavinium (Guaitoli 1981c, 1988b, 1990b) and more recently Crustumerium (Amoroso 1998; di Gennaro et al. 2004). Spatial and statistical analyses have been conducted for Veii (Guidi 1989, p. 290), Tarquinia (Pelfer 2005) and Gabii (Rajala 2002).

10 See, e.g., Bartoloni et al. 1994, pp. 2–3.

11 By metonymy, a *curia* indicated the place where the *curia* (a subdivision of people) met to discuss its affairs. According to Carandini 1997, pp. 459, 463, the *curia* was originally something in between the individual person and the political community. *Curiae* represent quarters of the city and are regulated by both family relationships and rights derived by residency. They are strongly related to the sacred ritual of the Argei (according to literary accounts *sacra* or *sacrificia Argeorum* were introduced by Numa, but according to Carandini they dated back to the time of the second Septimontium, or Latial Phase IIB, first half of the ninth century BC; Carandini 1997, p. 395). This ritual consisted of a *lustratio* (purifying procession) of the city, which occurred twice a year (16–17 March and 15 May) and entailed stopping in individual quarters of the town to make sacrifices and to pray at the so-called *sacella Argeorum* or *curiae* (for a topographical construction of the procession's itinerary see ibid., pp. 550–58). For an interpretation of the *curia* as one of the oldest centralising social and political institutions of early Rome, see Linke 1995, pp. 56–61. For further discussion on the topic and a different interpretation see Smith 2005, pp. 104–108.

12 Carandini 1997, pp. 459, 463; di Gennaro & Guidi 2000, p. 108.

13 For a review of several other cases in Latium vetus see Fulminante 2003.
14 Colonna 1991, who quotes Audring 1981. On the ritual definition of boundaries see also Stoddart & Riva 1996 and Zifferero 2002a, b.
15 See, e.g., the comparison between urban developments in central Italy and Greece by Smith 2005, pp. 100–105, and the question of the priority of urbanisation in the western vs. eastern Mediterranean, posed in Bartoloni 2006, p. 49 and Carandini 2007, pp. 13–14.
16 Peroni 1989, pp. 513, and Pacciarelli 2001, p. 120–128, 127, from an endogenous perspective and Rasmussen 2005, pp. 72, from an exogenous perspective. This 'supposed priority' of Etruria over Latium has been challenged by Vanzetti 2002, 2004 and Fulminante 2003, pp. 247–48.
17 Compare Section 7.2.
18 Stoddart 1999, p. 908.
19 Tylor 1871.
20 Morgan 1877.
21 Boas 1911.
22 For critical reviews of evolutionary theories see Haas 2001a, pp. 4–13, and Gosden 1999, pp. 476–482.
23 Haas 2001a, p. 11.
24 Steward 1955, 1967.
25 White 1949; cf. the account in Guidi 2000c, p. 9, and Haas 2001a, p. 7.
26 Childe 1925.
27 Childe 1950a, b, 1951. On the evolution of Childe's work see Guidi 2000c, pp. 6–8.
28 Service 1962.
29 Fried 1967.
30 Sahlins 1958, 1965.
31 Haas 2001a, p. 7.
32 Flannery 1972, esp. pp. 404–409 on the search for 'prime movers'.
33 Yoffee 2005, pp. 134–35.
34 Flannery 1972, pp. 4412–18, with fig. 3, p. 410.
35 Flannery 1972, pp. 414.
36 Johnson 1973.
37 From early criticisms of Morgan and Tylor's work by Boas 1911 to more recent concerns expressed by Rothman 2004.
38 For example, Gosden 1999, p. 471.
39 For example, Shanks and Tilley 1987, pp. 144–46.
40 For example, Shanks and Tilley 1987, pp. 175–85; Shennan 1993; Yoffee 1993.
41 See Crumley 2001, 1995.
42 Crumley 1995, p. 3.
43 Crumley 1995, p. 3.
44 Crumley 2001, pp. 20–24.
45 Crumley 2001, p. 22.
46 Crumley 1995, pp. 3–4.
47 Haas 2001a, p. 13.
48 Haas 2001a, pp. 15–18.
49 Haas 2001a, p. 13.
50 Haas 2001a, p. 15.
51 Feinman 2001.
52 Renfrew 1974, pp. 74–79, 83–84.
53 Feinman 2001, p. 156.
54 Yoffee 2005, p. 22.
55 Yoffee 2005, pp. 31–33.
56 Yoffee 2005, pp. 31–33.
57 Yoffee 2005, p. 33.
58 Yoffee 2005, pp. 35–40.
59 Yoffee 2005, pp. 34–36.
60 Yoffee 2005, p. 177.
61 Yoffee 2005, p. 197.
62 Yoffee 2005, pp. 177–79.
63 Yoffee 2005, pp. 169–71.
64 Yoffee 2005, p. 169.
65 Yoffee 2005, p. 170.
66 Yoffee 2005, p. 229.
67 Yoffee 2005, pp. 230; for the supernova concept see p. 214.
68 With this expression Yoffee refers to a change in status or condition of a substance which occurs at a critical point; an example is boiling water turning into steam at exactly 100 degrees Celsius; Yoffee 2005, p. 230.
69 Yoffee 2005, p. 230.
70 Power growth and access to goods and labour are basic concepts in the approach to social evolution elaborated by Yoffee 2005, pp. 34–38, 59–62; the interrelation between political practices, authority and space in shaping states and cities as both physical and ideological entities has been investigated by Smith 2003.
71 For more details about the Polis Centre Publications see Hansen & Heine Nielsen 2004, pp. xii–xiii.
72 The concepts of *polis* and city-state have been investigated mainly in two symposia: Hansen 1997a, 1998.
73 See, e.g., Hansen 2000a.
74 Hansen 2000b, pp. 11–12.
75 Hansen 2000b, pp. 15–16, on the concept of 'early states' or 'early civilizations'; for the 'territorial state' in central Italy see Cifani 2003, p. 193.
76 See, e.g., Hansen 2000a.
77 See, e.g., Hansen & Heine Nielsen 2004.
78 Hansen & Heine Nielsen 2004, Intro.
79 Compare the definition in, e.g., Vanzetti 2002, 2004.

80 For a synthetic but comprehensive introduction to Italian proto-history see Peroni 1994, 1996.
81 Peroni 1979, pp. 16–24.
82 Even though this is less evident on the Tyrrhenian side, for which the model of itinerant agricultural practices has been suggested; Guidi 1992, pp. 435–36.
83 Peroni 1979, p. 17.
84 Peroni 1979, p. 17, and Peroni 1996, pp. 96–98, for settlement organisation and pp. 108–10 for hoards and forms of wealth accumulation.
85 Peroni 1979, p. 17.
86 Peroni 1979, p. 11; Peroni 1996, pp. 7–9.
87 Peroni 1996, p. 195, quoting work by Francesco di Gennaro.
88 Peroni 1979, p. 19; Peroni 1996, p. 194.
89 Guidi 1992, p. 438.
90 Guidi 1992, pp. 438–39; Peroni 1996, pp. 202–204.
91 Peroni 1979, p. 20.
92 Peroni 1979, p. 14.
93 Peroni 1979, pp. 20–21; Peroni 1996, p. 242.
94 Peroni 1979, pp. 20–21.
95 Such as the large subterranean huts at Luni sul Mignone and Monte Rovello; see Peroni 1979, p. 23; Pacciarelli 1991b, pp. 196–97.
96 Peroni 1979, p. 23.
97 Guidi 1992, p. 427; Peroni 1996, p. 382.
98 Guidi 1992, p. 427.
99 Guidi 1992, p. 445.
100 Peroni 1979, p. 24; this topic will be discussed in more detail in ‘Funerary Evidence and Social Stratification’ in Section 7.2 and in Section 7.3.
101 Kirsten 1956; Ruschenbusch 1985.
102 From site catchment theory, introduced by Vita-Finzi and Higgs and developed by the Cambridge palaeo-ecology group, to the more dynamic territorial model elaborated by Flannery for early Mesoamerican villages; see Bintliff 1999b, pp. 506–22.
103 Forge 1972; Dunbar 1992, 1996.
104 See, e.g., Bintliff 1994, 1999a, 2000, 2002b, 2006, 2007.
105 Bintliff 2000, n. 3; Bintliff 2002b.
106 A point brought to my attention by John Bintliff (personal communication).
107 Kirsten 1956.
108 Ruschenbusch 1985.
109 Forge 1972; Dunbar 1992, 1996.
110 Bintliff 1999b, 2000.
111 Bintliff 1999b, esp. pp. 513–18.
112 Bintliff 1999b, p. 524.
113 Forge 1972.
114 Dunbar 1992, 1996.
115 Bintliff 1999b, pp. 528–529; Bintliff 2000, pp. 26–27.
116 Wobst 1974, 1976.
117 Bintliff 1999b, p. 532.
118 Bintliff 2000, p. 28; see also Bintliff 1999b, pp. 532–537.
119 Bintliff 1994; Bintliff 1999b, pp. 532 ff., esp. 535; more recently, Bintliff 2000, pp. 27–28.
120 Bintliff 2000, p. 27.
121 Bintliff 2000 with further reference to Wilkinson 1994.
122 Crumley 2001, p. 22.
123 Shelach 1999, pp. 9–46 and summary in intro.
124 Shelach 1999, p. 4.
125 Shelach 1999, pp. 40–41.
126 In contrast, e.g., with the approach adopted by the Copenhagen Polis Centre, which considers cities only in their final form in the seventh to sixth century BC.

TWO. THE LATIN LANDSCAPE, DATA AND METHODOLOGY

1 For an overview of the physical landscape of the Italian peninsula (with particular reference to central Italy) in relation to Italian cultures in pre-historic, proto-historic and Archaic times, see, e.g., Potter 1979, pp. 19–28; Barker & Rasmussen 1998, pp. 10–42, and more recently Forsythe 2005, pp. 7–11; for Latium, see the classic works by Almagia’ 1966 and Quilici 1979, pp. 29–34, and Ampolo et al. 1980, pp. 5–13. For a detailed reconstruction of the physical landscape of the central and southern modern region of Lazio during the Bronze and Iron Ages see Alessandri 2009.
2 As already noted, e.g., Forsythe 2005, p. 9.
3 Bietti Sestieri 1992a, pp. 74–75.
4 Ampolo et al. 1980, p. 6.
5 Quilici Gigli 1986; Cifani 2003.
6 Frutaz 1972.
7 Alessandri 2009, pp. 16–35.
8 Ampolo et al. 1980, pp. 6–7; on the formation of the Pontine Plain, see the sub-section ‘Geology’.
9 In times of great danger and distress, it was customary among most of the early Italian populations, especially among the Sabines, to swear to sacrifice everything born the next spring (both people and domestic animals) if the current calamity was brought to an end (Festus, s.v. *Ver sacrum*; Livy, *Epon.*, 22.9–10, 34.44; Strabo, *Geo.*, 5.12 (P465–467); Serv., *Aen.*, 7.796). But

in later times it was thought cruel to sacrifice so many innocent infants, and the custom was modified. The children were allowed to grow up, and in the spring of their twentieth or twenty-first year they were driven across the frontier of their native country with covered faces. These forced migrations, which were also used to counteract demographic pressure, have been dated, on the basis of literary accounts, to the Archaic Age (Dench 1995), but they may have occurred earlier and could have started even during the Bronze Age, according to Carandini 1997, pp. 138–141.

10 For example, Grandazzi 1997.

11 Quilici 1979, p. 30.

12 Heiken et al. 2005, pp. 14–15.

13 Heiken et al. 2005, pp. 15–16.

14 Quilici 1979, pp. 30–31.

15 Alessandri 2009, intro.

16 Quilici 1979, pp. 30–31.

17 Heiken et al. 2005, p. 11; until recently the *peperino di Albano* tuff was believed to have been the last product of the volcanic activity of the Alban Hills (about 29,000 years ago), but it has now been demonstrated that the most recent activity, which produced the so-called *lahar* (or mud deposits which define the *conglomerato del Tavolato*), dates between 6,000 and 3,000 years ago, with some continuation possibly into historic times; Funiciello et al. 2002, 2003; Arnoldus Huyzendveld 2007.

18 Colonna 1988a, p. 411.

19 di Gennaro et al. 2002, pp. 46–47; see also Solin 1996, p. 11, on the ethnic ambiguity of Nomentum, Fidenae and Ficulea.

20 d'Ercole et al. 2002, pp. 112–14, with fig. 1.

21 Enn., *Ann.*, 1.22; see also Plin. (E.), *HN*, 3.5.9.

22 Quilici 1979, pp. 29–30.

23 Colonna 1988a, pp. 411–12.

24 Grandazzi 1997, p. 72.

25 Plin. (E.), *HN*, 3.5.56.

26 Strabo, *Geo.*, 5.3.4; cf. 5.3.6.

27 Serv., *ad Aen.*, 1.6.

28 Vergil, *Aen.*, 7.797–800.

29 The same area is indicated as the southern limit of Latium by other ancient sources, which do not distinguish between Latium vetus and Latium adiectum: the Rome-Carthage treaty (509 BC) and the Pseudo Scylax's *Periplus* (sixth century BC).

30 Guidi et al. 2002.

31 Guidi et al. 2002.

32 Solin 1996.

33 Carafa 1997a.

34 Solin 1996, p. 11.

35 See, e.g., Ampolo et al. 1980; Colonna 1988a; Bietti Sestieri 1992a, pp. 221–31; Pacciarelli 1994, pp. 238–46.

36 Colonna 1988a, p. 426.

37 See, e.g., Bernardi 1964, p. 184; Alföldy 1965, p. 10; Colonna 1974, pp. 40–41; Colonna 1988a, p. 411, 425–26; Cornell 1995, p. 351.

38 Carandini 1997, p. 159 with n. 25.

39 Carandini 1997, pp. 138–52 on the Aborigenes, p. 57 on the Siculi and pp. 140–41, 230–31 on the *casci Latini*.

40 Carandini 1997, p. 141–42, 219–32, on the fusion between Aborigenes and *prisci Latini*, and pp. 228–38 on the Latin identity and Latial material culture.

41 Plin. (E.), *HN*, 3.68–70.

42 Cornell 1995, pp. 73, 293–98.

43 See, e.g, Carandini 1997, pp. 223, 231–33; and Peroni 1996, pp. 397–98.

44 Carafa 1997a, p. 615; see also fig. 16 in Carandini 1997, p. 234, and more recently Capanna 2005, figs. 1a and 1b.

45 See, e.g., Ampolo et al. 1980, with map at pp. 12–13.

46 As discussed in more detail in 'The Regional Sample' in Section 2.3, the catalogues of all pre- and proto-history sites, edited by Regione Lazio (Belardelli & Pascucci 1996; Belardelli et al. 2007), are very welcome because they have organised and systemised a great amount of data, previously dispersed throughout all sorts of publications and not always sufficiently homogeneous for typological or chronological classification. As for more analytical and interpretative work, see Alessandri 2009 on settlement dynamics in central and southern modern Lazio and Alessandri 2007, specifically on the coastal sites of southern Lazio.

47 For example, Pacciarelli 2001, pp. 87–93, 119–28.

48 Pacciarelli 2001, p. 87.

49 Pacciarelli 2001, p. 87, quoting Mari & Sperandio 1983.

50 Pacciarelli 2001, p. 89.

51 Pacciarelli 2001, pp. 88–93.

52 For example, Pacciarelli 2001, pp. 93, 120–28.

53 For example, Peroni 1989; Pacciarelli 2001, p. 127; Bietti Sestieri 1992a; Stoddart 1988.

54 Pacciarelli 2001, pp. 105–107, 128–40.

55 Pacciarelli 1994.

56 Pacciarelli 2001, pp. 120–27.

57 In this work the Latin centre of Ficulea refers to the site of Marco Simone Vecchio, according to the traditional interpretation suggested by Quilici & Quilici Gigli 1993; however a more recent interpretation identifies Ficulea with Casale Capobianco (di Gennaro & Panciera 2009–2010).

58 Pacciarelli 2001, p. 122.

59 Pacciarelli 2001, p. 124.

60 See, e.g., Guaitoli 1981a; Guidi 1989; and Pacciarelli 2001, p. 120.

61 Bartoloni et al. 1994, pp. 2–3.

62 While infant and juvenile burials within hut compounds are common practice in Latium vetus from the Early Iron Age well into the Archaic Age (Modica 1993: De Santis 2001: p. 278; Roncoroni 2001), adult formal graves within the settlement area are unusual and their interpretation is still a matter of debate. For a discussion with reference to Latium vetus see Fulminante 2003, pp. 238–39, and Guidi 2008; on Tarquinia in relation to central and northern Italy see Bonghi Iovino 2007; for new evidence from Veii see Bartoloni 2002–2003; on intra-mural burials in relation to 'human sacrifices' and 'ritual killing' in middle Tyrrhenian Italy in general see Di Fazio 2001, esp. pp. 484–88.

63 Guaitoli 1981d.

64 Pacciarelli 1991b, p. 172; Mandolesi 1999.

65 See, e.g., De Santis 1997 on evidence from the two sides of the Tiber River (Veii and Rome).

66 In 1870 the Pontificia Commissione di Antichità e Belle Arti (Pontifical Committee for Antiquities and Arts) was abolished and in its place the Soprintendenza per gli scavi di Antichità e per la custodia e la conservazione dei monumenti della provincia di Roma (Superintendence for the Excavations of Ancient Remains and for the Safeguarding and Conservation of Monuments within the Territory of the Province of Rome) was founded; Barbanera 1998, p. 34.

67 For a history of Italian archaeological research from the perspective of 'classical archaeology' see Barbanera 1998 and from the viewpoint of 'pre-historic archaeology' or 'palethnology' see Guidi 1988.

68 Barbanera 1998, pp. 34–48; Palombi 2006, pp. 53–93, 94–112, n. 44.

69 On Lanciani see specifically Palombi 2006. Lanciani, considered the founder of modern topography in Italy, conducted many excavations in Rome and provided scholars with important tools such as the *Forma Urbis* (a monumental map of ancient Rome from the Archaic Age until the sixth century AD, made up of 46 tables – 0.90 × 0.60 m – showing all monumental remains still visible or known from old excavations, with related bibliographic and topographic references) and the *Storia degli Scavi di Roma e notizie intorno alle collezioni romane di antichità* (The history of excavations and notes on the collections of Roman antiquities). Unfortunately, he was also a passive observer of the devastating destruction caused by urban growth in the developing capital. He tried to provide the most accurate record possible, but he never adopted any official position to promote a more conscious plan for the urban development of the city; Barbanera 1998, pp. 87–89.

70 In particular, he explored the area in front of the Temple of Caesar and the Temple of Vesta; he did some samples in the area of the Temple of Saturn and at the Capitoline Lane, and excavated the Comitium, where he found the Lapis Niger and explored the Fons Iuturnae (Iuturna's Spring); and he investigated the Archaic cemetery near the Temple of Antoninus and Faustina and identified the Equus Domitiani and the Lacus Curtius; Barbanera 1998, p. 39.

71 It ought to be mentioned that all pre- and proto-historic discoveries in Rome and the surrounding region until the beginning of the twentieth century were collated in the monumental synthesis by Pinza 1905. The methodology of this work and the attempt to establish a general typology with associated phases and relative chronology are particularly modern for Pinza's time, and some of his ideas are still valid, although phases and typologies have since been revised and refined.

72 More details on archaeology in Rome from the end of the nineteenth to the end of the twentieth century can be found in Coarelli 2004, 2006.

73 Lanciani 1909, which, notably, was published in English; see also Palombi 2006, pp. 298–306.

74 Ashby 1927.

75 Barker 1986.

76 Gell 1934.

77 Nibby 1837.

78 John Ward Perkins, director of the South Etruria Survey, by applying 'military site plotting' to the archaeological evidence present in the territory, started the first large-scale field-walking survey project in central Italy and introduced in this region the practice of landscape archaeology

(Ward Perkins 1955; Potter 1979). More recently this project has been updated and enhanced by an international team directed by the British School at Rome; see, e.g., Patterson & Millett 1998; Patterson 2004.

79 See, e.g., Lugli 1926, 1962.

80 See, e.g., Castagnoli & Cozza 1957; Castagnoli & Schmiedt 1957.

81 Mengarelli, e.g., investigated the site of Satricum, the Early Iron Age cemetery of Caracupa, with the corresponding settlement on the slope of the mountain above the thirteenth century AD abbey of Valvisciolo, and the acropolis of Norba. Antonielli excavated the cemetery of Riserva del Truglio (Alban Hills) and the so-called Aquoria votive deposit in the territory of Tibur. For a history of research of those sites and bibliographical references see Fulminante 2003. However, it should be noted that most Bronze Age and Early Iron Age finds from the Alban Hills (mainly from funerary contexts) were recovered mainly during the second half of the nineteenth century and have been systematically published by Gierow 1964–66.

82 Curtis 1925; Canciani & Von Hase 1979.

83 Gamurrini et al. 1972; for a critical account see Castagnoli 1974.

84 While an objective evaluation of Italian archaeology under Fascism could be difficult due to current political and ideological conditions (see, e.g., Manacorda 1982, 1985 and Barbanera 1998, pp. 119–54, esp. 134–54), it has to be admitted that most of the archaeological activity conducted at that time, especially in Rome, was driven by political propaganda rather than objective scientific research agendas. In addition, given the lack of attention to excavation techniques at that time in Italy (apart from a few exceptions) and the lack of any theoretical or methodological discussion, it is not surprising that most excavations were methodologically disastrous. For example, the construction of Via dei Fori Imperiali led to the unrecorded excavation of ancient remains and even the destruction of most of the Velia, one of the traditional 'seven hills' of Rome, corresponding to the ridge extending north-east from the Palatine Hill to the Equiline; Barbanera 1998, pp. 152–54.

85 Superintendences are state authorities, active at different levels (from the state to local districts within big cities), responsible for the management, preservation and enhancement of the Italian cultural heritage.

86 For example, the Gruppo Archeologico Romano (Roman Archaeological Group) and the Archeoclub should be mentioned, both of which have national and local branches.

87 Morselli & Tortorici 1981a.

88 Quilici 1974.

89 Giuliani 1966, 1970; Mari 1983, 1991.

90 Muzzioli 1970.

91 Quilici & Quilici Gigli 1978.

92 De Rossi 1979.

93 De Rossi 1967.

94 De Rossi 1970.

95 Brandizzi Vittucci 1969.

96 Piccarreta 1977.

97 Most of the territorial explorations were conducted by the two scholars in the 1970s and the following two decades: Quilici 1974; Quilici & Quilici Gigli 1978, 1980, 1986, 1993.

98 For example, Castel di Decima, Tibur, Ardea, Osteria dell'Osa and Nomentum; see Colonna 1976. In this catalogue, Lorenzo and Stefania Quilici compiled a kind of map of the 'archaeological risk' of all known pre-historic and Archaic sites in Latium vetus, noting which ones were still detectable, which had been destroyed by modern urbanisation and which needed to be preserved; Quilici Gigli 1976, with table IA. These discoveries revived interest in the archaeology of early Latium, as confirmed by the organisation of the exhibition and the foundation of the Comitato per L'Archeologia Laziale (Committee for Archaeology in Latium), which held annual meetings which were published in the review *Archeologia Laziale* (Latial archaeology).

99 Using modern methodologies and techniques, her team investigated all areas free of urbanisation within the territory under the jurisdiction of the city of Rome (Comune di Roma); Bietti Sestieri 1984.

100 Bietti Sestieri 1992b.

101 See Fulminante 2003.

102 Arnoldus Huyzendveld et al. 1992, 1995.

103 This research was pioneering not only in its aims and methodology but also in its organisation because it initiated a productive collaboration between the superintendences and the universities, which is still producing good results (e.g., Alessandri 2007); on this point compare the internal perspective of one of the members of those teams in Guidi 1980.

104 Among the fruits of that research are the works published from the late 1970s onwards by Marco

Pacciarelli, Francesco di Gennaro, Alessandro Guidi and Andrea Cardarelli.

105 Belardelli & Pascucci 1996; Belardelli et al. 2007.

106 A pivotal version of this GIS was presented by Andrea Carandini during the inaugural lecture of the conference *Landscape and Ethnicity in the Archaic Mediterranean Area, Cambridge 13th–14th March 2007*, organised by Simon Stoddart and Gabriele Cifani; the archaeological evidence within the Aurelian Wall was presented in the volume *Atlante di Roma* (Carandini 2012 (*non vidi*).

107 Nothing has yet been published by the Comune di Roma, but the Provincia di Roma has produced Amendolea 2004.

108 Complementary to novel surveys and excavations are two more traditional projects aimed at (1) continuing the series *Lexicon topographicum urbis Romae* (Steinby 1993–2000) by covering the ancient territory of the city (*suburbium*; La Regina et al. 2001 2008) and (2) collecting and publishing all archival archaeological and topographical data related to the city and its territory (Tomei 2005).

109 Brown 1967, 1974–75.

110 A useful summary of the stratigraphic sequence of the excavation (yet to be published) can be found in Pisani Sartorio 1990; see now Brocato & Terrenato 2012 for new research conducted in the area and a new examination of old excavations.

111 Pasquali 1936 has been followed by, e.g., Ampolo 1988a; Cristofani 1990; Cornell 1995, pp. 208–10; Carafa 1997b; and implicitly Smith 2000b, 2005.

112 Gabba 1998.

113 Sommella Mura et al. 2001.

114 A summary of the results and interpretations can be found in Carandini 1997; Carandini & Cappelli 2000; and Carandini 2004a, b, 2006, 2007. Final reports of the excavations are presented by Carandini & Carafa 2000 and Carandini et al. in press.

115 The area of the Magna Mater (Great Mother), investigated by Patrizio Pensabene, is particularly rich in Republican and Early Imperial monuments, reviving memories of Romulus (for final excavation reports on the phases between proto-historic times and the fourth century BC see Pensabene & Falzone 2001; for a summary of the results of more than two decades of excavation see Pensabene 2002). In particular, the identification of the so-called Casa Romuli has been a contentious issue (see Pensabene 2000; Brocato 2000a; Wiseman 2004–2006; and 'Urban Rome' in Section 3.1).

116 That is slightly earlier than or at least at the same time as the origin of the city-state in Greece. With reference to this topic and the debate on urban formation in middle Tyrrhenian Italy (exogenous/diffusionist model vs. endogenous model) see the introduction to this volume, Section 1.1, Sections 7.4 and 7.5 and the concluding chapter.

117 The exploration of the acropolis of Satricum during the past few decades is due principally to the dedication of Marianne Kleibrink. For a good review of research at Satricum updated through the late 1990s see Smith 1999.

118 The project's aims are summarised in Burgers 2002 and Attema 2002; the initial results are presented in Attema 2004 and Attema et al. 2007.

119 Fischer Hansen 1990; Brandt 1996. For a brief history of research at Ficana see Fulminante 2003, pp. 200–203.

120 In particular, a series of projects are currently being conducted on this site thanks to the collaboration between the superintendence, voluntary organisations (such as the Associazione DLF Roma, a voluntary association of national railway employees who do archaeology in their spare time) and the University of Iowa, the Institutum Romanum Finlandiae, Finnish Universities, Cambridge University and the Groningen Institute of Archaeology. See, e.g., Attema et al. 2013.

121 This is the limit generally adopted by modern scholars for the *suburbium* of Rome, e.g., in the volumes dedicated to the territory of Rome of the *Corpus Inscriptionum Latinarum*, or CIL (Panciera 1996) and of the *Lexicon topographicum urbis Romae*, or LTUR (La Regina et al. 2001–2008); a similar approach was taken in a conference on the *suburbium* held in Rome in 2005 (Jolivet et al. 2009). However, this might have also represented a limit of historical importance, as suggested by Alföldy 1965, who identified the eighth mile from Rome as the boundary of the first expansion of the territory of Rome (*ager Romanus*) in the fifth century BC. This was confirmed by Bruun 1991 on the basis of a passage of Frontinus (ca. 40–103 AD), who, in his work on aqueducts, distinguishes between water distribution *intra* and *extra urbem* at this boundary (Frontin., *Aq.* 9.1).

122 Casale Capobianco has been identified with the Latin settlement of Cameria by Carafa 2000c, but a more recent interpretation suggests that it should be identified with Ficulea (di Gennaro & Panciera 2009–2010).

123 See, e.g., Carafa 2000b and Capanna 2005 and discussion in 'The *Ager Romanus Antiquus:* Literary Approach' in Section 4.2.

124 di Gennaro et al. 2002, pp. 46–47.

125 See, e.g., Amoroso 2000, 2002; di Gennaro et al. 2003, 2005,. 2007.

126 See discussion in 'Settlement History' in Section 5.3 and Carandini 2009, published during an advanced stage of the present work.

127 See Carafa & Capanna 2009, p. 27 with figs. 2, 3; and Carandini 2009, esp. fig. 2.

128 Francesco di Gennaro, personal communication.

129 Quilici & Quilici Gigli 1980, 1986, 1993.

130 Permission to use unpublished data from a number of theses studies was kindly provided by the authors and by the directors of the survey project, Andrea Carandini and Francesco di Gennaro.

131 Carandini et al. 2007a, p. 13.

132 In Figure 10 'Bull Com' indicates articles published in *Bullettino della Commissione Archeologica Comunale*, 'Pre-historians' refers to published articles or papers with a focus on pre- and proto-historic phases, and 'Prehistory Rome' refers to the survey project conducted in the territory of Rome during the 1970s and 1980s by A. M. Bietti Sestieri and her team (Bietti Sestieri 1984, 1989; Bietti Sestieri & Sebastiani 1986; Bietti Sestieri & De Santis 2007); cf. Section 2.2.

133 Attema et al. 2007, p. 662.

134 Belardelli et al. 2007.

135 Belardelli & Pascucci 1996.

136 Bietti Sestieri 1984, 1989; Bietti Sestieri & Sebastiani 1986; Bietti Sestieri & De Santis 2007.

137 See, e.g., Carafa & Capanna 2009 and Carandini et al. 2007a.

138 Arnoldus Huyzendveld et al. 1992; 1995.

139 Quilici & Quilici Gigli 1980, 1986, 1993.

140 Giuliani 1966, 1970.

141 Mari 1983; Mari & Sperandio 1983, 1984; Mari 1991, 1992 (1993).

142 Compare Section 2.2.

143 Guidi 1982a.

144 Chiarucci 1996.

145 Morselli & Tortorici 1981a, b; more recently Fenelli 2003.

146 See, e.g., Attema 1990, 1993, 1996, 2002 and Attema et al. 2007.

147 See, e.g., discussions in Vanzetti 2004, pp. 20 and Attema et al. 2007, pp. 661–62.

148 Attema et al. 2007, pp. 661–62.

149 So far attention to environmental factors in the formation of archaeological deposits has been paid to work only within the Pontine region, directed by Peter Attema (see, e.g., Attema et al. 2007), and to work by the Rome Pre-history Project, directed by Anna Maria Bietti Sestieri (1984, 1989).

150 For identifications I have followed the hypotheses advanced by scholars in *Enciclopedia dell'Arte Antica* (Treccani), *Der Neue Pauly* (J. B. Metzler) and Nenci et al. 1924–99.

151 Vanzetti 2004.

152 See Vanzetti 2004, pp. 6–7, 20.

153 For Gabii see Guaitoli 1981a, b; for Ardea see Morselli & Tortorici 1981a, b; for Lavinium-Pratica di Mare see Guaitoli 1981c, 1988b; for Crustumerium see Amoroso 1998.

154 As already mentioned, this theory, originally elaborated by Ward Perkins 1961 for Veii, has been followed by Bartoloni 1989, p. 135, and proposed by Bietti Sestieri 1992a, pp. 76–78 for Gabii.

155 Guaitoli 1981d. The unity of proto-urban settlements, with internal divisions and articulations such as clans or *curiae* (which would explain the plurality of necropoleis), is assumed by Guidi 1992, p. 455; Pacciarelli 1994, pp. 232–33; and Carandini 1997, p. 463.

156 For example, Pacciarelli 1991b, p. 181; Pacciarelli 1994, p. 229; and Fulminante 2003 for Latin examples.

157 For example, Guidi 1985; Pacciarelli 1991b, 1994, 2001.

158 Belardelli et al. 2007 have offered valuable guidance in this task.

159 Clarke 1977, p. 5.

160 Fox 1922.

161 Haggett 1965. Probably the oldest spatial locational model is Von Thunen's 1826 model of land agricultural use (Von Thunen 1966), but certainly the most influential has been Christaller's central place theory, which he proposed in 1933 (Christaller 1966).

162 Clarke 1968.

163 See Vita-Finzi & Higgs 1970 and Chisholm 1968.

164 Clarke 1977, p. 5.

165 Clarke 1977; Hodder & Orton 1976.

166 See, e.g., Hodder & Hassall 1971; Hodder 1972.

167 Johnson 1981.

168 For example, Laxton & Cavanagh 1995; Brown & Witschey 2001; Drennan & Peterson 2004.
169 Guidi 1985.
170 Christaller 1966.
171 For example, Hodder & Hassall 1971; Hodder 1972; Johnson 1972, 1975; Grant 1986; Hodges 1988; De Ligt 1993; Morley 1996; Schallin 1997.
172 See, e.g., Lan 2004, who developed a GIS utility used in the present work.
173 Rajala 2005.
174 For example, Applebaum 1972.
175 See, e.g., Attema et al. 2007.
176 Bietti Sestieri 1984, 1989.
177 As suggested by Alessandro Vanzetti 2004 for the specific case of pre-historic settlement patterns.
178 Johnson 1981, p. 292.
179 Vanzetti 2004.
180 On the assumption that the archaeological material has been displaced from the top, due to post-depositional factors such as soil erosion and/or alluvial deposition.
181 It is generally agreed that with the beginning of the Early Iron Age, a formal distinction between the living and the dead is sanctioned; funerary areas are removed from the inhabited area and normally form a sort of ring around it (for a review of several cases in Latium vetus see Fulminante 2003). However, the plurality of these 'necropoleis' has been differently interpreted against or in favour of the assumption of the unity of the settlement (see discussion in Carandini 1997, pp. 459–63). On this topic see Section 1.1.
182 Renfrew 1975.
183 Haselgrove 1986, p. 7.
184 Johnson 1975, p. 289.
185 Johnson 1975, p. 290.
186 Collis 1986, p. 38.
187 The most popular in recent years seem to be the rank-size rule and the X-tent model. For the first see the references provided in notes 167–69 of this chapter and in Section 5.4, and for the second see, e.g., Soetens et al. 2002; Vansteenhuyse 2002; and Stoddart & Redhouse 2011.
188 Locational information was extracted using Arc GIS 9, Arc View 3.2 and a number of Arc View extensions, developed by Jenness Enterprises (Jenness 2005a, b).
189 See, e.g., Gaffney & van Leusen 1995; Llobera 1996, Wansleeben & Verhart 1997.
190 Tilley 1994.
191 Gaffney & Stancic 1991.
192 For a useful critical review of papers see Van Leusen 2002, fig. 6.
193 Wheatley & Gillings 2002, pp. 151–52.
194 Wheatley & Gillings 2002, pp. 203–204.
195 Van Leusen 2002, ch. 6, sec. 2.
196 See, e.g., Gaffney 2000, p. 13.
197 Van Leusen in Gaffney & van Leusen 1995.
198 Gaffney in Gaffney & van Leusen 1995.
199 Llobera 2001.
200 Van Leusen 2002, ch, 6, with particular reference to optimal route or least-cost path and all the personal and individual evaluations implied in choosing a particular route.
201 Gaffney 2000, p. 14.
202 Van Leusen 2002, ch. 6, p. 9.
203 On the importance of controlling for doubt and uncertainty in multiple lines of evidence see, e.g., Beckman & Christensen 2003 in a different context, such as Mesoamerican Nahua migrations.

THREE. THE CITY LEVEL: ROME FROM A SMALL BRONZE AGE VILLAGE TO THE GREAT CITY OF THE ARCHAIC AGE

1 De Sanctis 1907, pp. 1–50; Fraccaro 1957; Momigliano 1963, pp. 101–106, Cornell 1995, pp. 26–30; Smith 2005, pp. 91–100.
2 For a detailed historical reconstruction of the origin of Rome, which combines archaeological evidence with a critical analysis of historical literary and antiquarian accounts see Carandini 1997 (2d ed. 2003), 2006; see also Fayer 1982.
3 See Drummond & Ogilvie 1989; Wiseman 1994a, b, 1995; Gabba 1998, 1999, 2001; Poucet 1994, 2000; and Bietti Sestieri 2000.
4 Cornell 1995, pp. 26–29, 70–80; Cornell 2000b; Grandazzi 1997; Fentress & Guidi 1999; Peroni 2000; Pacciarelli 2001, p. 128.
5 The preliminary results of a similar project, only for the late Early Iron Age, has been published by Gusberti 2005b.
6 For several examples in Latium vetus see Fulminante 2003. On the relationship between city and territory see Panciera 1999 and Carandini 1994; on the ritual definition of boundaries see Stoddart & Riva 1996 and Zifferero 2002a, b.
7 Cazzella 2001, p. 265; Cazzella 2007, pp. 804–805.
8 Angle & Guidi 2007, p. 151, site N1. This hypothesis has also been accepted by Alessandri 2009, p. 535.
9 Carandini 1997, p. 113, n. 2.

10 Lugli & Rosa 2001, p. 285.

11 Pisani Sartorio 1990.

12 Angle & Guidi 2007.

13 Carandini 2006, p. 60, n. 158.

14 Cazzella 2007, p. 809.

15 Cazzella 2007, p. 809.

16 On this point see Alessandri 2009, p. 557.

17 Carandini 1997, pp. 113–14.

18 Baroni 2001; Lugli & Rosa 2001; Cazzella 2001, esp. p. 266.

19 Cazzella 2001, p. 267.

20 For earlier references see Carafa 1996, p. 793; and Cazzella 2001, p. 267.

21 Arvanitis 2005.

22 Cazzella 2001, p. 268.

23 Carandini 1997, pp. 119–137., esp. pp. 126–28.

24 Carandini 1997, p. 127, n. 5, provides different possibilities for the extent of Rome during the Recent Bronze Age. These range from a maximum of 60.81 ha (including the Capitoline Hill, 13.06 ha; the Palatine Hill, 16.58 ha; and the Aventine Hill, 31.27 ha) down to 29.54 ha (if the Aventine is not included); also included is a figure derived when only the Palatine Hill (16.58 ha) and the Capitolium (6.2 ha) are considered the core of the settlement (22.8 ha in total), while the Janiculum and the Aventine are considered peripheral areas.

25 Boccuccia 2001; Cazzella 2001, p. 268; according to the latter, metallurgical activity from such an early date is hypothetical.

26 Gjerstad 1956, pp. 86–88, 111–17; Colonna 1976, pp. 107–109.

27 Carafa 1996, p. 793.

28 Cazzella 2001, p. 268.

29 Carandini 1997, pp. 219–47, fig. VI; for the interpretation of the archaeological evidence see pp. 238–39.

30 At this time Rome was clearly part of the Latial culture, which was shared by all of the centres of modern Lazio to the south of the Tiber at least as far as Capo Circeo (Mons Circeus); Guidi et al. 2002.

31 Carafa 1996, p. 794.

32 Arvanitis 2005.

33 It has been suggested that cremation was reserved for adult males (De Santis 2001), but a new analysis of the evidence has shown that this rite was also used for women and children (Fulminante 2003, p. 157).

34 De Santis 2001.

35 De Santis 2001, p. 271.

36 Carafa 1993, who quotes Peroni 1989, p. 269.

37 Bettelli 1997, pp. 155–56.

38 Lugli 2001.

39 Cazzella 2001. A similar view can be found in Bietti Sestieri 2007, p. 222, fig. 10.

40 Carafa 1993, who quotes Peroni 1989, p. 269.

41 Bettelli 1997, pp. 155–56.

42 Bettelli 1997, p. 156.

43 Carafa 1993, who quotes Peroni 1989, p. 269.

44 Bettelli 1997, pp. 155–56.

45 According to Carandini's figures, the extent of the settlement area centred on the Quirinal (which he identifies with the Colles, as discussed later) is 52 ha (Carandini 1997, p. 335), while the settlement centred on the system of the Palatine Hill and Velia are 33 ha at the time of the Trimontium and 57 ha at the time of the Quinquimontium (as disussed later); see Carandini 1997, p. 323, n. 33.

46 Also known as Piazza Vittorio Emanuele II.

47 As noted by Carandini 1997, p. 336.

48 Carandini 1997, pp. 324–45, esp. pp. 335–36.

49 Bietti Sestieri 2000, p. 17.

50 Carandini 1997, pp. 267–79.

51 Varro, *Ling.*, 5.41.

52 Varro, *Ling.*, 6.24. As already mentioned, according to Carandini's reconstruction, the Montes comprised the system of hills centred on the hegemonic core Palatium/Velia.

53 Festus, 340 L.

54 Festus, 341 L.

55 Festus, 348 L.

56 On this discussion see Carandini 1997, p. 271, and Fraschetti 1990, pp. 131–43.

57 Carandini 1997, pp. 269–70.

58 As already mentioned, the distinction between the Colles and the Montes, based on different archaeological clues, is also suggested by the presence of different patron deities but parallel religious and cult systems; see Carandini 1997, pp. 324–45, esp. pp. 335–36.

59 Carandini 1997, pp. 267–380.

60 Carandini 1997, pp. 280–82.

61 As emphasised by Carandini 1997, pp. 280–82, the Cermalus is connected by literary accounts with Cacus, a mythical figure possibly related to Rome during the Recent Bronze Age.

62 Carandini 1997, pp. 280–311.

63 Carandini 1997, pp. 298, 311–59, 324 for the chronology; the final stage of this evolution would be the first Septimontium, with the inclusion of the Oppius, Caelian Hill and Cispius. The Colles and the Montes (first Septimontium) would finally merge into

the second Septimontium, for which see the following section.

64 Carandini 1997, 360–69.

65 Carafa 1996, pp. 798–99.

66 De Santis 2001, p. 279.

67 Carandini 1997, tables VIII, IX.

68 Bettelli 1997, pp. 155–56. As mentioned in the preceding section, both the Quirinal and the Esquiline necropoleis were possibly already in use from Latial Phase IIA.

69 Colonna 1996, pp. 342–43.

70 See, e.g., Guidi 1982b; Bettelli 1997; Carandini 1997; and Pacciarelli 2001; or earlier, Müller-Karpe 1962.

71 For example, Guidi 1998; *contra* Cazzella 2001.

72 Cazzella 2001, p. 268.

73 Carafa 1996, p. 799.

74 Ampolo et al. 1980, p. 168.

75 As already mentioned, during the Early Iron Age, burials areas were generally located around the plateaux reserved for domestic and productive activity; therefore, they are important factors in establishing the extent of a settlement.

76 As already mentioned, Early Iron Age urban centres should most likely be imagined as patchwork entities, with huts and inhabitation plots interspersed with gardens and service buildings.

77 Carandini 2007, p. 19, gives a similar estimate of 205 ha, while in an earlier publication (Carandini 1997, pp. 372–80), he calculates 251 ha, including the Caelian Hill. However, funerary evidence on this side of the city, such as the sporadic finds, most likely from burials, in the area of S. Giovanni in the Laterano church, exists only for later periods; see Colonna 1996, p. 350 and Buranelli & Le Pera Buranelli 1997.

78 Colonna 1974, pp. 302–303.

79 Guidi 1982b.

80 Carandini 1997, pp. 372–80.

81 Bietti Sestieri 2000, p. 17.

82 Buranelli & Le Pera Buranelli 1997.

83 Colonna 1996, p. 350.

84 Colonna 1996, pp. 344–45.

85 Modica 1993; De Santis 2001, p. 278; Roncoroni 2001.

86 Carandini 1997, pp. 507–508; Gusberti 2000.

87 Carandini 1997, pp. 507–508; Gallone 2000.

88 As already noted by Carandini 1997, p. 377.

89 Gusberti 2005b calculates the extent of Rome by the middle of the eighth century BC to be about 250 ha.

90 Colonna 1996, pp. 344–50.

91 Territorial investigations have been conducted, e.g., in Gabii, Veii and Lavinium; Guaitoli 1981b, d, 1988a, 1990a. An evaluation of these surveys is provided by Pacciarelli 2001, p. 128.

92 Preliminary reports of this excavation can be found in Carandini 1990a, b, 1992; and Carandini et al. 1992. The final reports have been published in two monographs: Carandini 1994–95 (2000), covering the archaeological evidence from the Palaeolithic Era until the Archaic Age, and Carandini & Papi 2006, covering the phases from the Republican Period onwards. An exhibition held in Rome in 2000 (Carandini & Cappelli 2000) and various monographs (e.g., Carandini 1997, 2006, 2007) provide Carandini's views on and interpretations of the origins of Rome.

93 The original environmental setting has been reconstructed by Ammerman 1994–95 (2000).

94 According to Anzidei & Gioia 1994–95 (2000) and Remotti 1994–95 (2000), p. 106, most materials date from the fifth to the fourth millennium BC. It is interesting to note the recovery of an *impasto* sherd with two incised signs (probably a 'ϰ' and a 'λ') reminiscent of similar Mycenaean 'marks' on objects from Cyprus and the Aeolian Islands, and therefore possibly dating back to the Bronze Age; Brocato 1994–95 (2000).

95 Brocato et al. 1994–95 (2000), esp. p. 118 for the chronology.

96 Ricci et al. 1994–95 (2000), pp. 139–60.

97 See, e.g., Carandini 1997, pp. 579–83 or, more recently, Carandini 2007, p. 50.

98 These objects were a dark *impasto* cup, a *figulina* bowl with a *figulina* rattle, two bronze and bone *fibulae* and a small bone cylindrical disk; see P. Brocato in Ricci et al. 1994–95 (2000): and Brocato 2000b.

99 Ricci et al. 1994–95 (2000), p. 150.

100 Ricci et al. 1994–95 (2000), p. 140.

101 Ricci et al. 1994–95 (2000), pp. 147–49 for the archaeological evidence and pp. 158–59 for the interpretation.

102 For the context and a topographical analysis see Gallone 2000; for the grave goods see Gusberti 2000.

103 Carandini 1997, pp. 505–506; Carandini 2000a.

104 Ricci et al. 1994–95 (2000), pp. 167–74.

105 Ricci et al. 1994–95 (2000), pp. 175–81.

106 Ricci et al. 1994–95 (2000), p. 181–85.

107 Carandini 1992, p. 18.

108 See, e.g., Carafa 2000a; and Carandini 2007, pp. 49–50.

109 For the most recent updates and reviews of excavation results see Panella et al. 2006 (2008); Panella 2006a, b.

110 One road, with N-S orientation (under the modern Via di S. Gregorio) connected this area with the Esquiline to the north and with the area of the Circus Maximus to the south (leading to Porta Capena and the Via Appia); the other, with NW-SE orientation, connected this area with the area of the Forum, towards the east. By the mid-sixth century BC seasonal rivers running parallel to these streets were canalised and drained, and streets were enlarged and remained almost unchanged up to the time of Nero's fire (Panella & Zeggio 2004, p. 68). As noted by the excavators, these not only were important communication routes, but also were used for ritual processions around the Palatine, such as triumphal processions (p. 69).

111 Panella & Zeggio 2004, pp. 69–72, 77–80.

112 Panella & Zeggio 2004, pp. 71–72.

113 Tac., *Ann.*, 12.24.

114 Filippi 2004a, p. 98.

115 According to Brocato 2000a, the area of huts and pits was modified and restored continuously from the Early Iron Age until the Republican Period, with a monumentalisation of the area and evidence of cult activity from the Archaic Age onwards.

116 Pensabene 1998, pp. 59–69, esp. fig. 1.P.

117 Angelelli & Falzone 1999; Pensabene 2000.

118 Pensabene 2000, p. 79.

119 Pensabene 1998, pp. 6 with fig. 1.K, 70–84; more recently on the same monuments see Pensabene & Falzone 2001 and Pensabene 2002.

120 Verrius Flaccus, in Festus, 310 L.

121 Translation by Wiseman 2004–2006, p. 113.

122 Carandini 2000b, pp. 128–33.

123 Solin., 1.17–18.

124 Translation by Wiseman 2004–2006, p. 113.

125 Wiseman 2004–2006.

126 Wiseman 2004–2006, pp. 115–19.

127 Wiseman 2004–2006, pp. 115–19.

128 Pensabene 2000, esp. pp. 78–81.

129 Earthen walls, dated to the eighth century BC, have been excavated in Fidenae (di Gennaro et al. 2005), Veii (Boitani et al. 2008), Vulci (Moretti Sgubini 2006) and Tarquinia (Cataldi et al. 2008); a stone fortification wall dated to the sixth century BC associated with a ditch, possibly in use even before the seventh century BC, has also been excavated in Crustumerium (Barbaro et al. 2013, pp. 24–27).

130 Preliminary reports have been published in *Workshop di Archeologia Classica*; the final publication is in preparation (Carandini et al. in press).

131 For the ongoing topographical discussion on the Archaic monuments along the Via Sacra see Carandini 2004b.

132 Carandini 2004b, pp. 53–58.

133 Carandini 2004b, pp. 59–70, 72–75, cf. fig. 5 p. 89.

134 Cupitò 2004.

135 Arvanitis 2004, 2010.

136 Carettoni 1978–80.

137 Preliminary reports of this excavation can be found in Filippi 2004b, 2005b.

138 There are no diagnostic sherds directly associated with this building, but it must be slightly earlier than the subsequent phase (house 2), dated by associated pottery to between 750 and 725 BC; Filippi 2004b, pp. 106–107.

139 Filippi 2004b, pp. 107–109.

140 Filippi 2004b, p. 109.

141 Cupitò 2004, p. 128.

142 Filippi 2004b, pp. 113–14.

143 Filippi 2004b, pp. 113–14.

144 Filippi 2004b, pp. 115–19.

145 Filippi 2004b, p. 121.

146 Carandini 2004b, pp. 60–74; Filippi 2004b, p. 121.

147 Scott 1988.

148 Arvanitis 2004, pp. 146–147.

149 Arvanitis 2004, 2005, 2010.

150 Carandini 2004a.

151 Carafa 2004, p. 136.

152 Carafa 2004, pp. 136–37.

153 Filippi 2005a.

154 Filippi 2005a, pp. 96–99, fig. 1.

155 Giovannini 1985.

156 It is generally agreed that salt fields were located at the mouth of the Tiber on the Etruscan side (although more recently it has been suggested that they might also have been present on the Latin side). It has been suggested that from there the salt travelled through the Via Campana to the ford in the Tiber at the foot of the Capitoline Hill and, once on the other side of the river, reached the interior regions of Italy through the Via Salaria. The salt trade would date back even to the Bronze Age and would explain the supremacy of the Capitoline Hill (and therefore of Rome) over similar contemporary hilltop settlements in the region; Filippi 2005a, pp. 98–99.

157 Filippi 2005a, pp. 100–101, holds a position advanced earlier by La Rocca 1976, 1982,

Coarelli 1992 and Torelli 1993, but rejected by Bartoloni 1986 and Colonna 1981a.

158 Filippi 2005a, pp. 103–15; Gusberti 2005a.

159 Filippi 2005a, pp. 113–14.

160 Filippi 2005a, pp. 109–10.

161 Filippi 2005a, pp. 114.

162 Carafa 1998; updated in Carafa 2005.

163 Carafa 2005, pp. 136–39.

164 Carafa 2005, pp. 139–40.

165 This was the area where eighth century BC layers were excavated; Carafa 2005, p. 141, fig. 6.

166 Carafa 2005, pp. 142–43.

167 Carafa 2005, pp. 142–43, fig. 8.

168 Carafa 2005, pp. 143–49, fig. 10.

169 Albertoni 2000, p. 322.

170 See Gusberti 2005c for finds from the votive deposit and Filippi 2000 for a topographical analysis; a different interpretation can be found in Mazzei 2007.

171 While archaeological evidence (see, e.g., *The Great Rome of the Tarquins* exhibition; Cristofani 1990) has led scholars to re-evaluate the literary tradition concerning the second Regal Period, or the time of the Tarquin dynasty, it ought to be noted that the traditional chronologies of the seven kings are very much debated and might represent later artificial reconstructions; see, e.g., the discussion in Cornell 1995, pp. 119–26.

172 See Cristofani 1990.

173 Carafa & Terrenato 1996, p. 812.

174 Cifani 1997a, b.

175 Carafa & Terrenato 1996, p. 812.

176 Carafa & Terrenato 1996, p. 812; according to Cifani 2008, p. 298, the attribution of "Maximus" to Iovis Optimus Maximus derives from the new absolute power of the Tarquins monarchy.

177 Pasquali 1936 has been followed, e.g., by Ampolo 1988a; Cristofani 1990; Carafa 1997b, Cornell 1995, pp. 208–10; and, implicitly, Smith 2000b, 2005. *Contra* Gabba 1998.

178 Pisani Sartorio 1990.

179 Sommella Mura et al. 2001, p. 264; Danti 2001, pp. 342–43.

180 For a recent account of the monument and discussion of different interpretations see Cifani 2008, pp. 80–109.

181 See the reconstruction by Cifani 2008, p. 104, fig. 85, with a discussion of previous interpretations.

182 Sommella Mura 2000, pp. 20–21, figs. 25–26.

183 Cifani 2008, p. 103.

184 Especially when considering the 'international' character of Archaic Rome; Carafa 1997b, pp. 9–10.

185 Carafa 1997b, pp. 9–10.

186 Traces of an Archaic temple have been found under the so-called *auguratorium* in the sacred area of the Victory Temple at the south-western corner of the Palatine Hill; Pensabene 2000, p. 74.

187 Coarelli 1988, pp. 414–30.

188 According to Livy, *Ann.*, 1.35.8–9, the Circus Maximus was built by Tarquinius Priscus in order to celebrate the Ludi Magni (Great Games), which he himself founded. The Ludi Magni were celebrated between 9 and 14 September; September, like November, was a month free of any festivities (apart from the dedication of the Capitoline temple on 13 September). The relationship between these two months and monuments built by the Tarquins reinforces both the historical tradition about a Romulean calendar system of ten months (renewed by Numa, who added September and November) and the dating of the Circus Maximus to the time of the Tarquins; Carafa 1997b, pp. 13–14.

189 Carafa 1997b, pp. 12–13; on the Cloaca Maxima of the Archaic Age see also Antognoli & Bianchi 2009.

190 Only a few houses were investigated, but it has been calculated that almost twenty could hypothetically have been located on the two sides of the Via Sacra; Carafa 1997b.

191 Brocato et al. 1994–95 (2000), pp. 215–66; see also the latest phase of the Domus Regia, or House of the Kings, in the area of the Vesta Sanctuary; Filippi 2004b, p. 121.

192 Brocato et al. 1994–1995 (2000), pp. 244–50; Carafa 1997b, p. 15.

193 Ricci et al. 1994–1995 (2000), p. 185–88, 195, 208.

194 For example, Poucet 1992, pp. 230–31; Cornell 1995, pp. 198–202; Ross Holloway 1996, pp. 91–102; Smith 1996, p. 153; Gabba 1998; Pallottino 2000, pp. 264–65.

195 Cifani 1997a, b and Cifani 2008; the hypothesis had already been suggested by Carafa 1997b, pp. 14–15.

196 Cifani 1997a, pp. 362–63.

197 L. Quilici in Cristofani 1990, p. 41.

198 Ampolo et al. 1980, p. 168. Similar calculations are given by Ampolo 1988b, p. 234; Coarelli 1994, p. 10; and Cifani 1997a, p. 380.

199 Cazzella 2001.

200 Cazzella 2001; but previously Guidi 1982b.

201 Bettelli 1997.

202 Guidi 1982b, p. 282.

203 Cazzella 2001.

204 In the present work 202 ha have been calculated; Carandini 2007, p. 19, gave a similar figure of 205 ha, while Carandini 1997, pp. 372–80, gave a slightly different estimate of 251 ha; a similar extension of Rome had already been suggested for the first half of the eighth century BC by Colonna 1974, pp. 302–303.

205 As already noted, e.g., by Guidi 1982b, p. 283, and Carandini 2007, p. 19.

206 Carandini 2007, p. 19; but previously Guidi 1982b, p. 279.

207 At this point Gusberti 2005b and Carandini 2007 calculate that the extent of the city was about 240–50 ha; the present work calculates 275 ha including the Caelian and 210 ha without it; in any case, neither estimate is too dissimilar to the extent of the large unified proto-urban settlement, or second Septimontium, estimated to be about 200 ha.

208 See, e.g., Gualtieri 1987 on pre-Roman southern Italy, Kenzle 1997 on the northern San Juan region of the American Southwest between 1100 and 1300 AD and Gat 2002 on Greek city-states; see also articles mainly on the Greek and Hellenised world in Van De Maele & Fossey 1992 and Goldhill 2007 from an interdisciplinary perspective. With reference to Latium a link between *aggeres* and the emergence of urban communities is suggested by Ziolkoski 2005; this author, however, advances an interpretation of the proto-urban phenomenon and the recent archaeological evidence from the centre of Rome that is different from the one presented in this volume.

209 Veii (Boitani et al. 2008), Vulci (Moretti Sgubini 2006) and Tarquinia (Cataldi et al. 2008).

210 di Gennaro et al. 2005.

211 Barbaro et al. 2013, pp. 24–27.

212 Guaitoli 1981b, d.

FOUR. THE TERRITORIAL LEVEL: DEFINITION AND DATING OF THE *AGER ROMANUS ANTIQUUS*

1 Panciera 1999, p. 11; for a definition of Thiessen polygons and references see Section 4.3.

2 Alföldy 1962; Lugli 1966; Quilici Gigli 1978; Colonna 1991.

3 For a brief introduction to GIS applications, including definitions of cost-surface and visibility analyses, as well as a discussion of theoretical and methodological issues and critical problems see Section 2.4. The Web site of ESRI (one of the leading companies of GIS software and technologies) states: 'A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information'. GIS allows us to visualise, question, manipulate and analyse data in many ways that reveal patterns and trends in the form of maps, globes, reports and charts. It can answer questions and help solve problems by analysing data in a way that users can easily understand and share; www.gis.com/whatisgis/index.html. For an overview of the potential of GIS applications for archaeological research see manuals such as those by Gillings & Wise 2000; Weatley 2002; and Conolly & Lake 2006.

4 As explained in more detail in Section 2.4, viewshed analyses are a common function of most GIS software; they can be used to calculate and visualise an area that is (inter-)visible from a specific location; Conolly & Lake 2006, pp. 226–33.

5 Some preliminary results of this investigation of the *ager Romanus antiquus* carried out by comparing traditional literary approaches with more recent theoretical perspectives have been published in Fulminante 2005, 2006a.

6 Mommsen 1854–56, p. 35; Becker 1843, pp. 83–84; De Sanctis 1907, pp. 377–78; Beloch 1926, p. 169; Ashby 1927, p. 29; Momigliano 1963, pp. 100–101; Lugli 1951, 1966; Alföldy 1962; Quilici Gigli 1978; Scheid 1987; Colonna 1991; but see more recent challenging thoughts by Smith 2008a.

7 Strabo, *Geo.*, 5.3.2: 'At any rate, between the fifth and the sixth of those stones which indicate the miles from Rome there is a place called '*Festoi*' and this, it is declared, is a boundary of what was then the Roman territory; and, further, the priests celebrate sacrificial festivals, called 'Ambarvalia', on the same day, both there and at several other places, as being boundaries' (translation by Loeb).

8 *CIL* VI, 2099 G; Lugli 1966, p. 647, followed by Coarelli 2003, connected Ambarvalia and Festoi with Fratres Arvales and Lucus Dea Dia. Different opinions are given by Alföldy 1965, pp. 297–98; Scheid 1990, pp. 101–102; and Colonna 1991, p. 212, who identifies Festoi with Terminalia and the site of Acqua Acetosa Laurentina.

9 Scheid 1987.

10 Coarelli 1981, p. 212.

11 The ‘rotacism’ is a conversion of a consonant into -*r*-. As reported by Varro, *Ling*, 7.26: ‘in multis verbis, in quo antiqui dicebant s postea dicunt r … foedesum foederum, plusima plurima, meliosem meliorem, asenam arenam’ (‘in many words in which ancient people used the sound “s”, in later times they pronounced it as “r” …’). In pre-classical Latin, intervocalic -*s*- was converted to -*r*-; for example, hono-s in the nominative became hono-r-is in the genitive (intervocalic); or the name Valesios, attested in sixth century BC inscriptions, became Valerius. Some literary sources document the rotacism in personal names by the fourth century BC (the *Digest*, I.2.2.36, states that Appius Claudius Caecus [end of the fourth to the beginning of the third century BC] invented the consonant -*r*-). Therefore, given the traditionalism of personal names, it has to be assumed that by that date rotacism was widespread in the language.

12 Scheid 1987, pp. 589–90.

13 On Romulus’s conquests see Carafa 2000b.

14 Ov., *Fast.*, 2.679 ff.

15 Lugli 1966, p. 643.

16 Lugli 1966; Colonna 1991, pp. 211–12, according to whom this is Festoi mentioned by Strabo; *contra* Coarelli 2003.

17 Bedini 1994.

18 Coarelli 1981, p. 213; Coarelli 1988–92; see also Scheid 1990, p. 96.

19 Scheid 1987, pp. 276; Scheid 1990, p. 101.

20 Colonna 1991, p. 216.

21 The Temple of Fortuna in the S. Omobono sanctuary; see Pisani Sartorio 1990.

22 In this place, Coriolanus (fifth century BC), exiled among the Volscian and in rebellion against Rome, twice met his mother, Veturia, and his wife, Volumnia, who were sent by the Romans to persuade him to spare the city; Lugli 1966, p. 644.

23 Quilici Gigli 1981, esp. p. 556 for the inscription; the text of the inscription is as follows: Livia [D] rusi f uxs[or … fecit]// Impp. C[aes]s. Severus et [Antoninus …] et [Iulia] Aug. mater[Augg. Restituerunt …], *CIL*, VI, 883. According to this scholar, some terracotta statues acquired by Roman collectors in 1885 and dated to the second century BC could have belonged to the temple as well; Quilici Gigli 1981, pp. 560.

24 Alföldy 1965, p. 301.

25 Lugli 1966, p. 643; cf. Livy, *Epon.*, 1.25.1–5.

26 Livy., *Epon*, 22.1.12; cf. Alföldy 1965, p. 303, with n. 1.

27 Scheid 1987, p. 592.

28 Lugli 1951, p. 372.

29 Colonna 1996, pp. 347–48.

30 Lugli 1966, p. 642; cf. Livy, *Epon.*, 1.23.3, 2.39.5.

31 App., *B Civ.*, 1.254 ff.; cf. Plut, *Sull.*, 9.3–4.

32 Lugli 1966, p. 647.

33 Scheid 1990, p. 101.

34 Lugli 1966; Quilici Gigli 1978.

35 Colonna 1991 takes into consideration not only the presence of Etruscan sites on the right bank of the Tiber, but also recent excavations such as those at Laurentina and La Rustica; moreover, he uses the recent localisation of the Fortuna Muliebris sanctuary proposed by Stefania Quilici Gigli herself.

36 Colonna 1991, p. 210 n. 2.

37 For a recent archaeological and historical account of this site and the surrounding area see Vistoli 2005.

38 For locations of and references related to these sites see De Santis 1997, p. 102, fig.1.

39 Colonna 1991, p. 212.

40 Cifani 2005.

41 Cifani 2005, pp. 207 ff.

42 Quilici Gigli 1978.

43 Filippini & Slaska 2009, p. 446, with n. 29, site D 200.

44 The *Fasti Praenestini* is a Roman calendar inscribed on marble, believed to have been compiled by Verrius Flaccus in AD 6–9 and displayed in the forum of Praenestae (Palestrina).

45 *CIL*, 1.2, p. 317.

46 Ov., *Fast.*, 4.905–906.

47 A similar localisation had already been suggested by Quilici & Quilici Gigli 1986, p. 297; by contrast, Gianferrari 1995, pp. 139–140, suggests locating the sanctuary in the area of Tor Lupara.

48 As observed by an anonymous reviewer.

49 According to the definition by Conolly & Lake 2006, p. 298, a ‘raster map represents spatial data using a grid of equally sized *cells* or *pixels.* Each cell contains a value recording some *attribute* at that location’; according the same authors, a raster cost-surface map, or cost-of-passage map, is a map with a cell grid structure ‘that models the energetic, time or other cost of travelling across each map *cell*’; Conolly & Lake 2006, p. 291. For more details and references see Section 2.4.

50 Van Leusen 2002.

51 Rajala 2002.

52 Machovina 1996.

53 Ampolo et al. 1980, p. 28, after Beloch 1926, pp. 169, table 1, calculates the *ager Romanus antiquus* to be about 154 km²; Capanna 2005, p. 177, fig. 4, calculates 186 km², including both the Latin and Etruscan sides.

54 Alföldy 1962, 1965, p. 305.

55 Scheid 1990, p. 101.

56 See Alföldy 1965, p. 123.

57 Momigliano 1963, p. 101.

58 Quilici Gigli 1978, p. 572.

59 Lugli 1966, p. 644.

60 Ampolo 1988b, p. 321.

61 Thomsen 1980, p. 135.

62 For a review of the annalistic tradition see Musti 1990; for different traditions see, e.g., Coarelli 1990.

63 Capanna 2005; for a different perspective see, e.g., Kuhoff 1995.

64 Smith 2008a.

65 Coarelli 1990.

66 Zevi 1990, pp. 150–51.

67 Edlund-Berry 2008.

68 Edlund-Berry 2008.

69 Besides works already mentioned, see Coarelli 1990, pp. 152–53, with a discussion of literary accounts that differ from the annalistic tradition, such as the Rome-Carthage treaty (sixth to fifth century BC), Pseudo Scylax, *Per.*, 5 (fourth to third century BC) and Hes., *Theog.*, 101 (eighth to seventh century BC), in relation to the archaeological evidence, with a focus on Latin temple architectural terracottas.

70 This opinion is shared by Quilici Gigli 1978; Ampolo 1988b; Colonna 1991; and Carandini 1997.

71 Colonna 1991, p. 212; Carandini 1997, pp. 445–56.

72 Haggett 1965, p. 247.

73 See references in Hodder & Orton 1976, p. 187; Grant 1986, p. 19.

74 Renfrew 1975, p. 17, fig. 5.

75 di Gennaro 1986, 2005.

76 Bietti Sestieri 1992a.

77 Pini & Seripa 1986.

78 Bouma & van't Lindenhout 1996–97.

79 Amoroso 2002; Amoroso & Barbina 2003.

80 Capanna 2005.

81 Haggett 1965, p. 247.

82 Haggett 1965, p. 248.

83 Grant 1986.

84 For a discussion of how settlement size was established in the present study see 'The Regional Sample' in Section 2.3.

85 Similar thresholds have also been identified in Final Bronze Age Etruria by di Gennaro 1986 and di Gennaro & Barbaro 2008.

86 A very large number of settlements smaller than 2 ha can also be isolated.

87 For example, Peroni 1996, who quotes Francesco di Gennaro.

88 Similar settlement size discontinuity has been observed for Etruscan Archaic cities by Harris 1989, p. 378, on the basis of data from Judson & Hemphill 1981. For Etruria and Latium vetus, with particular reference to Early Iron Age phases, see Guidi 1985 and Pacciarelli 2001, pp. 120–36, with fig. 70, p. 126.

89 See, e.g., Plin (E.), *NH.*, 3.68–69, for a list of 'ancient towns' which no longer existed in Archaic times; Dion. Hal, *Ant. Rom.*, 5.61, also mentions a number of Latin cities, some of which still survived during his time (first century BC to first century AD). Another list is provided by Strabo, *Geo.*, 5.3.2 ff., while a detailed account of Archaic Latin cities, with reference to their interactions with Rome, is found in the first book of Livy's *Ab urbe condita*.

90 See, e.g., Arietti 1996; Chiarucci 1996; and Pacciarelli 2001, p. 124.

91 Reggiani et al. 1998, p. 120.

92 Guidi 1985; Pacciarelli 2001, pp. 120–36, with fig. 70, p. 126.

93 Bietti Sestieri 1992a, pp. 221–43.

94 Carandini 1997, pp. 233–38. He assumes the existence of 'districts', constituted by 'hegemonic' centres and smaller 'minor' settlements, and proposes the identification of the 'hegemonic' centres as the main settlements of the Populi Albenses, mentioned in Plin. (E.), *NH*, 3.69 and Dion. Hal, *Ant. Rom*, 2.53, who annually took part in the Feriae Latinae (Latin Festival) on the Monte Cavo in the area of the Alban Hills. Attempts to identify and locate the Populi Albenses have been undertaken by Carafa 1997a; Grandazzi 1999; and more recently Capanna 2005, p. 174. with fig. 1a, b.

95 di Gennaro 1986, pp. 67–68; di Gennaro & Peroni 1986, pp. 193–94; Peroni 1996, pp. 195–96.

96 di Gennaro 1986, pp. 67–68; di Gennaro & Peroni 1986, pp. 193–94; Peroni 1996, pp. 195–96.

97 di Gennaro 1986, pp. 67–68; di Gennaro & Peroni 1986, pp. 193–94; Peroni 1996, pp. 195–96.

98 See Francesco di Gennaro quoted by Peroni 1996, pp. 196–97; and di Gennaro 1986, pp. 67–68.

99 Carandini 1997, pp. 235–36. An experimental attempt has been made to compare the hypothetical location of the Populi Albenses with Latin sites known only from the archaeological evidence. The maps produced, although they do not match perfectly, show that the two types of evidence can be closely compared; see Capanna 2005, p. 174, with fig. 1a, b.

100 Rajala 2002, 2004.

101 Alling Gregg 1988, quoted by Rajala 2002, pp. 202–203.

102 In a more recent contribution Rajala 2006 again discusses demographic and density issues in middle Tyrrhenian Italy and admits that higher densities may be possible (up to 33–45 or even 80–85 inhabitants per hectare, following Cardarelli 1997).

103 This estimation corresponds to the lower end of the density range calculated by Simon Stoddart and Nigel Spivey for Etruria at the same time: 120–200 inhabitants per hectare; see Stoddart & Spivey 1990, p. 61.

104 Rajala 2002, pp. 205–10.

105 Rajala 2002, pp. 210–36 with particular reference to the site of Nepi.

106 Rajala 2002, pp. 259–67.

107 This median value has been established on the basis of ethnographic estimates of household size in agricultural communities; Chamberlain 2006, pp. 53, 126–27; see also Bintliff 2002b, p. 158.

108 Bintliff 2002b, p. 159.

109 See 'Dating of the Fifth–Sixth Mile Boundary' in Section 4.2.

110 Bintliff 2002b.

111 Bintliff 2002b, pp. 158–59.

112 Cardarelli 1997, discussed in Rajala 2006.

113 See 'Proto-Urban Rome' in Section 3.1 for discussion and references.

114 See, e.g., Pliny (E.), *NH*, 18.2.7–4.21.

115 Cristiano Viglietti, personal communication.

116 Viglietti 2011, pp. 139–55; cf. Ampolo 1980a, pp. 25–26, who assumes a plot of 7 *iugera* of arable land and a total of 7 ha of land to sustain a family of three people.

117 Ampolo 1980a, p. 26.

118 Colonna 1991; on Acqua Acetosa Laurentina see references in Section 4.2.

119 Even adopting the lowest density estimations suggested by Rajala 2006.

120 On this see Carafa 2000b.

121 Estimates vary between 100 and 200 ha; see discussion 'Proto-Urban Rome' in Section 3.1.

122 As previously mentioned and briefly illustrated in Section 2.4, a viewshed is an area of land that is visible to the human eye from a fixed vantage point; see, e.g., Conolly & Lake 2006, pp. 225–33, for a detailed discussion of this technique.

123 The importance of the ford in the Tiber for the very first settlement of Rome is emphasized by Grandazzi 1997, pp. 75–91, and Cazzella 2001.

124 On the *auspicia* taken by Romulus and Remus prior to the foundation of the city see Carandini 2007, pp. 37–47.

125 Even adopting the lowest population density (ca. 18 inhabitants per hectare; Rajala 2002) and not including the rural population in the calculation.

126 As discussed earlier, figures vary slightly according to the density population value adopted.

127 If a low-density population is adopted (Rajala 2002), this would have happened only during the Orientalizing Age.

128 See Colonna 1991 and 'Dating of the Fifth–Sixth Mile Boundary' in Section 4.2.

FIVE. THE TERRITORIAL LEVEL: THE ROMAN HINTERLAND FROM THE BRONZE AGE TO THE REPUBLICAN PERIOD

1 For more details and further discussion of the data sample see 'The Territorial Sample' in Section 2.3 and Section 5.2.

2 Quilici & Quilici Gigli 1980, 1986, 1993.

3 Cupitò 2007, pp. 13–25; this work is one of the *tesi di laurea* (master's dissertations) of which the Suburbium Project is constituted (as described later) and represents one of the first studies of this research project to be published. It was published only after data analysis for the present work had been completed. On the project methodology see also Carafa & Capanna 2009.

4 See di Gennaro & De Filippis 1995; for other criteria adopted in different areas of the *suburbium* see Cupitò 2007, p. 13.

5 A brief synthesis of the study of some of these territories (Tenuta Settebagni, investigated by Alessandra Tronelli; Tenute Marcigliano, Inviolatella a Marcigliano e Malpasso, investigated by Fabiola Fraioli; and Tenuta Radicicoli del Bene, investigated by Francesca dell'Era) can be found in di Gennaro et al. 2000–2001.

6 See in particular Cupitò 2007, pp. 21–22.

7 As already mentioned, a similar classification was adopted in Cupitò 2007, p. 21.
8 For such a sub-differentiation see, e.g., Cupitò 2007, p. 21.
9 See, e.g., the excavation of the so-called Auditorium villa in Rome in d'Alessio 2004 and Carandini et al. 2007b and the re-evaluation studies of old excavations such as those of Terrenato 2001 and Becker 2006.
10 Compare Cupitò 2007, p. 21.
11 The same approach is taken in Cupitò 2007, p. 22.
12 See d'Alessio 2004 and Carandini et al. 2007b for the Auditorium villa and Terrenato 2001 and Becker 2006 for general studies.
13 Perkins 1999.
14 A dense occupation of this area of the *suburbium* of Rome during the Archaic Age was also observed by di Gennaro et al. 2000–2001, p. 476; they noticed that there is a difference in Tenuta Settebagni, where the increment in rural sites is much less evident.
15 By contrast, Quilici & Quilici Gigli 1980, p. 294, noted in this territory between Fidenae and Crustumerium a decrease in the number of sites during the Republican Period, while di Gennaro et al. 2000–2011, p. 477, noted in general a stability or increase in the number of sites, with slightly different numbers in the different *tenute*.
16 The abbreviations for chronological phases in the figures are as follows: MBA, Middle Bronze Age; IA, Iron Age; OA, Orientalizing Age; AA, Archaic Age; ERP, Early Republican Period; MRP, Middle Republican Period; LRP, Late Republican Period.
17 For example, by Enei 1995 in the area of Caere; by di Giuseppe 2004 in the South Etruria Survey re-evaluation project; and by di Gennaro 1986 on a regional level.
18 For Latium vetus on a regional level see Guidi 2003; for the territory of Rome see Bietti Sestieri 1989.
19 This has already been emphasised for the territory of Vulci by Colonna 1977a, for the territory to the south of Rome by Bedini 1985 and for the territory of Veii by De Santis 1997.
20 For the area to the north-east of Rome see, e.g., Quilici & Quilici Gigli 1993; for a re-evaluation of the South Etruria Survey see, e.g., Patterson et al. 2004, pp. 5–13.
21 Carafa 2000c.
22 For an exhaustive explanation of the role of this key institution in early Roman history, with a detailed discussion of ancient sources, archaeological evidence and modern scholarship, see Smith 2008b.
23 di Gennaro et al. 2003, pp. 26–30.
24 Patterson et al. 2004, pp. 5–7.
25 Colonna 1990.
26 Colonna 1977b. On the Twelve Tables, the most ancient codification of Roman laws, which date back to the fifth century BC and, in with respect to practices such as sumptuary restrictions, even to the sixth century BC, see Cornell 1995, pp. 106–107, 272–92.
27 Carandini et al. 2007b, *non vidi*.
28 di Giuseppe 2005.
29 di Giuseppe 2005, fig. 3.
30 di Giuseppe 2005, fig. 4.
31 Becker 2006; d'Alessio 2004; Carandini et al. 2007b.
32 J. A. Becker 2006.
33 di Giuseppe 2005.
34 Carandini 2009.
35 Christopher Smith, personal communication.
36 Gabba 1982a, b.
37 Although Cifani 2009 suggests the existence of private property since the Archaic Age and Early Republican Period (end of the sixth and the fifth century BC), this does not resolve the issue.
38 Raynaud 1996, 2000.
39 Terrenato 2001.
40 Gaffney & Stancic 1991.
41 On this see the work by van Joolen 2002, 2003 discussed in 'Archaeological Land Evaluation (RPC Project)' in Section 7.2.
42 In another work I have investigated the location of settlements in relation to road and river networks at the regional level; Fulminante 2012b.
43 Shennan 1997, pp. 104–26. For a detailed illustration of these calculations and their mathematical explanation see Section A2.1 of the appendix.
44 As described by Conolly & Lake 2006, p. 291, 'a Digital Elevation Model is a digital map that provides a model of the elevation of (part of) the Earth's surface'; for more details about different types of DEM, how to build them and how to use them see Conolly & Lake 2006, pp. 90–111.
45 Digital data for the analysis of this work were provided by Provincia di Roma (Rome Province Council), Regione Lazio (County

Council) and Ministero dell'Ambiente (National Environment Council).

46 Perkins 1999, p. 44.

47 Bietti Sestieri & Sebastiani 1986; Gianni 1991.

48 Machovina 1996.

49 For a definition of a raster map see Chapter 4, note 49, and Conolly & Lake 2006, p. 298.

50 As noted by an anonymous reviewer.

51 Ravelli & Howarth 1987.

52 Within geography very useful reviews of several models (Von Thunen's model, central place theory, etc.) are those of Haggett 1965 and Haggett et al. 1977. In archaeology the founders of this tradition might be considered Clarke 1968, 1977 and Hodder & Orton 1976.

53 Bintliff 1994, 1999a, 2000, 2002b, 2006, 2007.

54 For the analysis of site distribution in relation to hierarchical levels the work by Perkins 1999 on data from the Albegna Valley Survey has been a point of reference and model for the present work.

55 A similar high density of villages and rural sites within the first 3 km from minor sites was also found in the Tuscania Survey (Barker & Rasmussen 1998, pp. 147 ff.); the same authors note that a similar networked hierarchy of small villages, in some cases less than 1 km apart, and rural farms has also been observed in some areas of the Albegna Valley Survey (Attolini et al. 1991) and the Gubbio Survey (Malone & Stoddart 1994).

56 Bintliff 1999b; see Section 1.2 for a more detailed discussion of this model with references.

57 Bintliff 1999b.

58 di Gennaro et al. 2007.

59 Terrenato 1998.

60 Johnson 1980; see 'Rank-Size Rule', Section 6.3, for further discussion and references.

61 With reference to central Italy see, e.g., Guidi 1985 and Section 6.3.

62 Perkins 1999; Laxton & Cavanagh 1995.

63 Falconer & Savage 1995.

64 Peroni 1996, who quotes di Gennaro.

65 di Gennaro et al. 2003.

66 Quilici & Quilici Gigli 1980; Amoroso 1998.

67 Carandini 2009.

68 Carandini 1988, 1989.

69 As already mentioned, these analyses were modelled on a study conducted on data from the re-evaluation and enhancement project of the South Etruria Survey; di Giuseppe 2005.

70 Point suggested by an anonymous reviewer.

71 Gabba 1982a, b.

72 Raynaud 1996, 2000; Terrenato 2001.

73 Although it should be noted that the continuity of the occupation of the same site might be due simply to the fact that it was a favourable location in terms of good land and availibility of resources.

74 Carandini 2009.

75 See, e.g., Bintliff 1999b, 2000.

76 Bintliff 1999b.

SIX. THE REGIONAL LEVEL: SETTLEMENT PATTERN ANALYSIS IN LATIUM VETUS FROM THE BRONZE AGE TO THE ARCHAIC AGE

1 For example, Bietti Sestieri 1989; Angle et al. 1992; Gianni 1991; Guidi 2003.

2 Locational information was extracted using the following GIS applications: Arc GIS 9, ArcView 3.2 and a number of Arc View extensions, developed by Jenness Enterprises (Jenness 2005a, b).

3 On the importance of controlling for doubt and uncertainty by using multiple lines of evidence see, e.g., Beckman & Christensen 2003, in a different context such as Mesoamerican Nahua migrations.

4 Bintliff 2002b.

5 Cardarelli 1997.

6 Compare Tables 12 and 13 with calculations performed for Bronze and Early Iron Age Rome, taking into consideration Bintliff's and Cardarelli's parameters.

7 Unfortunately it was not possible to apply to the present analysis a work on archaeological land evaluation in first millennium BC Italy by van Joolen 2003, although the results were integrated into the final chapters.

8 For an analysis of socio-economic conditions of pottery production in central Italy during the Early Iron Age see Nijboer 1998.

9 See Chapter 5, note 44.

10 Used for this study with the kind permission of Regione Lazio.

11 Jenness 2005a.

12 Machovina 1996.

13 Rajala 2002.

14 Bietti Sestieri & Sebastiani 1986; Gianni 1991.

15 As suggested by Rajala 1999 in her study on site distribution in Etruria (Nepi).

16 Zipf 1949.

17 However, see, e.g., methodological and theoretical issues raised by Uerkvitz 1992.

18 Johnson 1981.

19 Johnson 1981, p. 174.

20 Falconer & Savage 1995.

21 Johnson 1980, pp. 239–40.

22 For example, in the Maya lowlands during the Classic Period (Adams & Jones 1981); in central Italy in the second half of the second and the first millennium BC (Guidi 1985, Cardosa 1993); in the southern Levant during the Bronze Age (third and second millennia BC; Falconer & Savage 1995; Savage 1997); in the central plains of northern China in the third millennium BC (Liu 1996); and in central Thailand from the sixth to the ninth century AD (Mudar 1999).

23 Hodder 1979, p. 120; see also Johnson 1981, pp. 176–77.

24 Hodder 1979, p. 118.

25 Laxton & Cavanagh 1995, p. 332.

26 Hodder 1979, p. 143.

27 Johnson 1980, p. 241; Johnson 1981, p. 167.

28 Johnson 1981, p. 173.

29 See Johnson 1981, pp. 154–158 for the rank-size index and Drennan & Peterson 2004 for the A-shape coefficient.

30 Drennan & Peterson 2004.

31 Johnson 1981, p. 177.

32 Compare previous work by Guidi 1985 for Etruria and Latium vetus and by Cardosa 1993 for Etruria.

33 Pacciarelli 2001, pp. 87–88.

34 Peroni 1996, p. 196, quoting Francesco di Gennaro.

35 Peroni 1996, p. 196, quoting Francesco di Gennaro.

36 Johnson 1981, pp. 154 ff.

37 Drennan & Peterson 2004.

38 See Drennan & Peterson 2004 for a detailed explanation of the A-shape coefficient and the mathematical justification for the statistical confidence intervals.

39 Steponaitis 1978, p. 427.

40 Steponaitis 1978, p. 427.

41 Steponaitis 1978, pp. 428–30.

42 Steponaitis 1978, pp. 434–35.

43 Steponaitis 1978, p. 436.

44 Steponaitis 1978, pp. 430–31, esp. n. 3.

45 Steponaitis 1978, p. 435.

46 For more details about Thiessen polygons and a discussion of previous work which applied the same methodology to Bronze and Early Iron Age central Italy, see Section 4.2, especially the application of a theoretical approach to the study of the *ager Romanus antiquus*.

47 See, e.g., settlement size classification of Bronze Age Etruscan sites in di Gennaro 1986 and di Gennaro & Barbaro 2008 and settlement size classification of Etruscan and Latin Early Iron Age sites in Guidi 1985 and Pacciarelli 2001, pp. 120–28.

48 Again, Arc View 3.2 was used to perform the analysis. In particular, the weighted mean of points (v. 1.2c) extension, produced by Jenness 2004, was used to calculate the CGMC.

49 Christaller 1933.

50 See, e.g., Hodder & Hassall 1971; Hodder 1972; Johnson 1972, 1975; Grant 1986; Hodges 1988; De Ligt 1993; Morley 1996; and Schalling 1997.

51 Christaller 1933, pp. 58–83; Haggett 1965, pp. 121–25.

52 For example, Guidi 1985; di Gennaro 1986; di Gennaro & Barbaro 2008; Pacciarelli 2001, pp. 120–28.

53 See, e.g., Bintliff 2002a, p. 215.

54 See, e.g., Hodder & Hassall 1971; Hodder 1972.

55 Bintliff 2002a, pp. 216–17.

56 See, e.g., Bintliff 1999a, b, 2000, 2002a, b.

57 Bintliff 1999b, pp. 513–18.

58 The statistical correlation appears to be not as strong for the later phases – the Orientalizing and Archaic Ages.

59 Bintliff 1999b, pp. 513–18.

60 Bintliff 2000, pp. 27–28.

61 Bintliff 1999b; Bintliff 2000, with reference to Forge 1972.

62 Bintliff 1999b, pp. 528 ff.; Bintliff 2000, pp. 26–27.

63 Wobst 1974, 1976, quoted by Bintliff 1999b, 2000.

64 Dunbar 1992, 1996, quoted by Bintliff 1999b, 2000.

65 Bintliff 2000, pp. 27–28.

66 Bintliff 2000, p. 28.

67 Bintliff 2000, quoting Wilkinson 1994.

68 Lan 2004, esp. p. 236.

69 Haggett 1965, pp. 247–48.

70 Haggett 1965, pp. 247–48.

71 Grant 1986.

72 Lan 2004.

73 Lan 2004.

74 Renfrew & Level 1979.

75 Stoddart 1990.

76 Stoddart & Redhouse 2011.

77 Ducke 2006.

78 Lan 2004. For another application using multiplicative weighted Voronoi diagrams, the Gambini Program, see Rajala 2005.

79 Fulminante 2007a.

80 For the reconstruction of the ancient geomorphology and physical environment of coastal Latium vetus during pre- and proto-history see Alessandri 2007.

81 Mari 1983, 1991; Festuccia & Zabotti 1992.

82 di Gennaro & Guidi 2000; for the importance of the exclusion of burials from the inhabited area in the process of settlement nucleation and urban formation in Latium vetus during the early Iron Age see Fulminante 2003.

83 As emphasised by an anonymous reviewer, a boundary issue exists here, firstly because it is not clear what happens in the area immediately to the north of the Tiber. Admittedly, the computer programme used in the analysis does not allow one to take into consideration regional boundaries (but see the earlier discussion about fictional boundary sites, which could resolve this issue). Secondly, the geographical limits of the present study, focused on Latium vetus, impose a somewhat artificial boundary between Latium and Etruria along the Tiber. Given the permeable nature of this frontier, future research will combine the two regions (Etruria and Latium) to resolve this issue.

84 Bietti Sestieri & Sebastiani 1986.

85 For a discussion of the problematic historical and geographical definitions of this region and a description of the boundaries adopted in this work see 'The Limits of Latium Vetus' in Section 2.1.

86 A constant association between sites and alluvial soils was also noted in the Recent and the Final Bronze Age by Bietti Sestieri & Sebastiani 1986 for Rome and its surroundings and by Angle et al. 1992 for southern Latium. Angle et al. 1991–92 noted a prevalent association of Middle Bronze Age 1–2 sites with sandy soils in central and southern Latium.

87 For a synthesis see Peroni 2000 and Pacciarelli 2001; for Etruria see, e.g., di Gennaro 1988, 2000.

88 Bietti Sestieri & Sebastiani 1986, p. 68.

89 Angle et al. 1992, p. 271.

90 Rajala 1999.

91 See Peroni 2000, pp. 26–30; Pacciarelli 2001.

92 Carandini 1997, pp. 602–606; for a similar interpretation of Etruscan society see Barker & Rasmussen 1998, pp. 53–80; for further discussion and references on this topic see 'Evolutionary Perspectives on Urbanisation in Bronze and Early Iron Age Latium Vetus' in Section 7.3.

93 For, e.g., Bintliff 1994, 1999a.

94 On territorial control over minor centres during the Early Iron Age see also 'The Nature of Settlement Development in Latium vetus' in Section 2.1.

SEVEN. MULTI-DIMENSIONAL AND MULTI-THEORETICAL APPROACH TO URBANISATION AND STATE FORMATION IN LATIUM VETUS

1 See, e.g., Guidi 1986, 2000a; di Gennaro & Peroni 1986; di Gennaro 1988, 2000; Stoddart & Spivey 1990; Barker & Rasmussen 1998; Peroni 1994, 1996, 2000; and Pacciarelli 2001.

2 See summaries in Pacciarelli 2001, pp. 87–114, of Etruria, Latium and Sabina and in Barker & Rasmussen 1998, pp. 53–60, of Bronze Age Etruria; for territoriality and settlement hierarchical organisation in particular, see di Gennaro 1988.

3 Summaries in Pacciarelli 2001, pp. 120–70, and Barker & Rasmussen 1998, pp. 60–70; for the relationship between settlements and funerary areas see Pacciarelli 1991b, p. 181; Pacciarelli 1994, p. 229; and Fulminante 2003 (also settlement hierarchy, p. 248).

4 Pacciarelli 1991b, p. 181; Pacciarelli 1994, p. 229.

5 Pacciarelli 2001, pp. 120–27.

6 Guaitoli 1977; Pacciarelli 2001, pp. 120–27.

7 Guidi 2000.

8 Pacciarelli 1991b, pp. 170–79; see also Fulminante & Stoddart 2012.

9 Pinza 1905.

10 Bietti Sestieri 1992b.

11 For a review and re-evaluation of Bronze Age and Early Iron Age funerary and settlement evidence available from publications by the 1990s see Fulminante 2003.

12 Bietti Sestieri 1992a, b.

13 Smith 1996, p. 63.

14 Bietti Sestieri 1992a, p. 161.

15 Bietti Sestieri 1992a, p. 208.

16 Bietti Sestieri 1992a, p. 211.

17 Pacciarelli 2001, pp. 238–42.

18 Fulminante 2003.

19 See, e.g., Guidi & Zarattini 1993 and De Santis 2005a, 2007.

20 Smith 1996 p. 65; Guidi 2000c, p. 200–14; Fulminante 2003, pp. 240–41.

21 Fokkens 1995; I thank Professor John Bintliff for bringing this reference to my attention.

22 Vanzetti 1996, p. 175.

23 Smith 1996.

24 Smith 1996, p. 125.

25 For a summary of these approaches see Vanzetti 2002 and Fulminante 2003, pp. 244–49.

26 The same hypothesis has been suggested and proved by Fulminante 2003.

27 Smith 1996, pp. 44–71.

28 Smith 1996, p. 119.

29 Smith 1996, p. 47, following Bietti Sestieri 1981; see also more recently the introduction to Riva & Vella 2006.

30 Smith 1996, p. 119.

31 Fulminante 2003.

32 According to the definition and perspective proposed by Peroni 1989, 1994, 1996 and his students.

33 See, e.g., the classification of societies according to Elman Service's model of evolution in Table 1.

34 Nijboer 1998; Rasmus Brandt 2001.

35 Rasmus Brandt 2001, pp. 408–409.

36 Rasmus Brandt 2001, p. 410.

37 Rasmus Brandt 2001, p. 411.

38 Nijboer 1998, pp. 242–46.

39 Nijboer 1998, p. 204.

40 Nijboer 1998, pp.159.

41 Nijboer 1997, p. 391.

42 Nijboer 1998, pp.189–93, 203.

43 Nijboer 1997, p. 40.

44 Bietti Sestieri 1992a, p. 94.

45 Carafa 1995, p. 264.

46 Colonna 1988b, p. 297; Bietti Sestieri 1992a, p. 94.

47 Colonna 1988b, pp. 298–99.

48 Bietti Sestieri 1992a, p. 94.

49 Iaia 2005, p. 264.

50 Iaia 2005, p. 251.

51 Iaia 2005, p. 270.

52 Guidi 1981, 1989–90, 2000b, 2004.

53 Guidi 1981, 1989–90, 2000b, 2004.

54 Albertoni 2000.

55 Carandini 2004b; Filippi 2004a, b.

56 Recently Guidi 2000b, 2004.

57 Smith 2000a, pp. 84–85.

58 Bouma & van't Lindenhout 1996–97.

59 Zifferero 2002a; Zifferero 2002b.

60 Stoddart & Riva 1996.

61 Bouma & van't Lindenhout 1996–97.

62 Bouma & van't Lindenhout 1996–97, pp. 101–102.

63 Stoddart & Riva 1996.

64 Zifferero 2002a, b.

65 G. Bradley 2000a.

66 G. Bradley 2000a, p. 109.

67 Pallottino 1991, p. 47, quoted by G. Bradley 2000, p. 110.

68 Torelli 1988, pp. 54–55, quoted by G. Bradley 2000, p. 111.

69 G. Bradley 2000, p. 117.

70 Peroni 1994, 1996.

71 Ampolo 1976–77, 1987.

72 Guidi et al. 2002, p. 6.

73 Cifani 2002, 2003.

74 di Gennaro et al. 2004.

75 Fulminante 2012a.

76 Emberling 1997, quoting Barth 1969.

77 This is the 'stuff' which conveys the cultural content, probably slightly underestimated by Barth 1969.

78 Emberling 1997, pp. 311.

79 For a summary of the aims of the project see, e.g., Burgers 2002.

80 Burgers 2002.

81 Van Joolen 2002, 2003.

82 Van Joolen 2002, p. 183.

83 Van Joolen 2002, p. 186.

84 Van Joolen 2002, p. 187.

85 Van Joolen 2002, p. 187.

86 Van Joolen 2002, pp. 187–88.

87 Van Joolen 2002, p. 191.

88 Motta 2002.

89 Motta 2002, p. 72.

90 Motta 2002, p. 76.

91 Ampolo et al. 1980.

92 Costantini & Giorgi 2001, p. 245. Olive cultivation is probably already attested during the Bronze Age in Abruzzo; Fiorentino et al. 2000.

93 Guidi 1992, p. 456; Bartoloni 1989, p. 189; Delpino 1997, p. 194.

94 See, e.g., Barker 1981, p. 217, and Forni 1989; however, see the preceding section for different results and interpretations with particular reference to the Pontine region in the study by van Joolen 2002, 2003.

95 This object and its ritual meaning are discussed in Torelli 1997a.

96 Forni 1989.

97 See, e.g., Earle 1991.

98 See, e.g., Shanks &Tilley 1987, pp. 175–85; Shennan 1993; Yoffee 1993; and various contributions in Haas 2001b.

99 See in particular Peroni 1979, 1994, 1996.

100 See, e.g., Gibson & Geselowitz 1988, quoted by Carandini 1997, p. 602.

101 Guidi 1992, pp. 452–53.

102 Guidi 1992, p. 453; Carandini 1997, p. 605.

103 Guidi 1992, pp. 453–54; Barker & Rasmussen 1998, pp. 53–60.

104 Guidi 1992, p. 455; Carandini 1997, p. 605.

105 Renfrew 1986.

106 Guidi 1992, p. 457; Carandini 1997, p. 605: Carandini 2007.

107 Peroni 1979, p. 7.

108 See, e.g., Shennan 1993; Yoffee 1993; and various contributions in Haas 2001b.

109 Fulminante 2003, 2007b; Fulminante & Stoddart 2012.

110 An exception seems to be represented by a male burial in Santa Palomba (*tenuta* Cancelliera 6), probably dating to Latial Phase IIB (first half of the ninth century BC), which was found with other, older male burials (Latial Period I and Sub-Phase IIA1, second half of the eleventh to the tenth century BC), which showed clear attributes of political and religious leadership (chariots, swords, deity statuettes, double shields, etc.); De Santis 2011.

111 Bietti Sestieri & De Santis 2003; De Santis 2005a, b: De Santis 2011, p. 15; see also Fulminante 2003, 2007b for a specific point of view on these burials in the context of the social organisation of pre- and proto-historic Latium vetus.

112 Guidi 1992, p. 454; Pacciarelli 2001, p. 212; Fulminante 2003, p. 240.

113 See, e.g., Guidi 1992, pp. 456–57, Pacciarelli 2001, p. 261; Fulminante 2003; De Santis 2005b; and Guidi 2006.

114 This distinction between 'traditional' status symbol items (weapons in male burials and spinning and weaving instruments in female burials) and more 'fashionable' exotic luxury items (*flabella*, banquet and *symposium* implements, etc) found in Latin Orientalizing princely burials (Fulminante 2003, pp. 242–43) deserves further investigation in order to provide clarity on the interaction of local and external stimuli in the formation of Orientalizing aristocracies and their ideology. The impact of Greek and Near Eastern influences in the formation of aristocratic ideology in central Italy during the Orientalizing Age has been discussed by Guidi & Santoro 2010.

115 As suggested by Guidi 2006. On the use of heterarchical vs. hierarchical categories for the interpretation of complex societies see Crumley 1995, 2001.

116 Feinman 2001.

117 Feinman 2001.

118 Bietti Sestieri 1992a, pp. 199–220.

119 On this see, e.g., Bedini 1985, who has been followed by many other scholars.

120 The bibliographic references on princely tombs cannot be summarised in a note; for further references and a critical discussion of their meaning see Fulminante 2003; or for a brief and updated account see Fulminante 2008. For the Orientalizing Age as a phenomenon driven by new elite 'consumption' tastes see Riva & Vella 2006.

121 For excavation results in the settlement and necropolis of Laurentina Acqua see Bedini 1979, 1980, 1994.

122 di Gennaro & Guidi 2000; Fulminante 2003, p. 239; Guidi 2006.

123 See discussion in preceding section; see also di Gennaro & Guidi 2000; Fulminante 2003, p. 239; and Guidi 2006.

124 Shelach 1999, intro. and pp. 9–44, esp. 39–41.

125 Shelach 1999, intro. and pp. 9–44, esp. 39–41. Shelach's multi-linear conjunctions can be compared to 'times of transition', a term borrowed from complex adaptive systems theory by Yoffee 2005, pp. 169–70; however, they differ because in complex adaptive systems theory, times of transitions are normally regulated and affected by feedback mechanisms, while Shelach does not assume any a priori interdependency mechanism, but suggests 'localities' or 'junctions', where these mechanisms might or might not be detected; Shelach 1999, p. 4.

126 Compare, e.g., the socio-economic and ideological elements which define early states or early civilizations according to Trigger 2003 (evolutionary perspective) with the trajectories of development observed cross-culturally in the evolution of complex cultural systems by Haas 2001a, pp. 16–17 (multi-trajectory approach).

127 Peroni 1979, pp. 16–24, esp. p. 20.

128 For instance, the supposed priority of southern Etruria over nearby regions is still a much debated topic; see, e.g., di Gennaro 1990, 2000; Bietti Sestieri 1997; di Gennaro & Guidi 2000; Guidi 1998, 2006; and Pacciarelli 1991a, b, 1994, 2001; for a fresh perspective on this question see Fulminante & Stoddart 2012.

129 See, e.g., Bintliff 1999a, 1994, 2000, 2002b, 2006, 2007.

130 In the case of Early Iron Age Etruscan proto-urban centres see Barker & Rasmussen 1998, p. 61.

131 Compare, e.g., Pacciarelli 1991b, Mandolesi 1999, and Fulminante 2003, p. 248, on secondary 'minor centres' with De Santis 1997, pp. 101–16, on 'local aristocratic power sites', mainly known from burial evidence.

132 Bietti Sestieri & De Santis 2003; De Santis 2005a, b, 2011.

133 Guidi 1992, p. 454; Pacciarelli 2001, p. 212; Fulminante 2003, p. 240.

134 Such as Coste del Marano and Monte Rovello in the Tolfa Hills area; Guidi 1992, p. 441.

135 Peroni 1979, p. 22.

136 As suggested by Fokkens 1995 for Bronze Age European 'warriors' burials.

137 di Gennaro & Guidi 2000; Fulminante 2003, p. 239; Guidi 2006.

138 Guidi 1992, p. 440.

139 Guidi 1992, p. 441. However, the process is more evident in the ninth and eighth centuries BC; Bietti Sestieri 1992a, pp. 94–95; Colonna 1988b, pp. 295–99.

140 Pacciarelli 2001, pp. 170–76.

141 On Casale Nuovo see Angle et al. 2004 and Alessandri 2007; on Latin 'industrial coastal sites' see Angle & Belardelli 2007.

142 Guidi 1992, pp. 440–41.

143 Barker & Rasmussen 1998, pp. 57–58. According to Nijboer 1998, p. 204, iron technology standardisation and product diversification particularly improves in the course of the eighth century BC.

144 Guidi 1992, pp. 439–40; Barker & Rasmussen 1998, pp. 57–58.

145 Guidi 1992, p. 439.

146 Müller- Karpe 1959, pp. 71.

147 Pliny (E.), *N.H.*, 3.46. See Pallottino 1991, p. 47, and G. Bradley 2000 for a different interpretation and discussion.

148 Peroni 1979, p. 27.

149 Guaitoli 1981b, d.

150 In addition to the well-known earthen wall around the Palatine Hill in Rome, 'defensive' earthworks, dated to the eighth century BC, have been excavated in Fidenae (di Gennaro et al. 2005), Veii (Boitani et al. 2008), Vulci (Moretti Sgubini 2006) and Tarquinia (Cataldi et al. 2008). As noted earlier, a stone wall of the sixth century BC associated with a ditch possibly dated before the seventh century BC has been excavated in Crustumerium (Barbaro et al. 2013, pp. 24–27).

151 See Ampolo et al. 1980, pp. 145–50 or, more recently, De Santis 1995, 2005b; Bartoloni 2003; and Fulminante 2003.

152 Colonna 1988b, pp. 297–99; Bietti Sestieri 1992a, p. 94.

153 Nijboer 1997, p. 391.

154 Iaia 2005.

155 See, e.g., Barker 1981, p. 217; Forni 1989; and Costantini & Giorgi 2001, p. 245. However, different areas of central Italy yield different results: while olive cultivation is already present in Abruzzo during the Bronze Age (Fiorentino et al. 2000), it is not clearly attested in the Pontine region before the Archaic Age (Van Joolen 2002, 2003).

156 Guidi 2004.

157 Compare R. Bradley 2000, p. 158.

158 Ampolo 1976–77, 1981, 1987; Colonna 1981b, 1987.

159 See, among his other contributions, Bintliff 1999a, b, 2000, 2006.

160 Bintliff 1999b, esp. pp. 513–18.

161 Bintliff 2002b.

162 Bintliff 1999b, p. 524.

163 Bintliff 2000, pp. 27–28.

164 Bintliff 2002b.

165 Similar population estimates (between 100 and 1,000 inhabitants, given the average size of outcrop of 4–5 ha) are calculated for Bronze Age Etruria by di Gennaro 1986, 1988; see also Barker & Rasmussen 1998, p. 53.

166 Forge 1972.

167 Forge 1972.

168 Dunbar 1992, 1996.

169 Wobst 1974, 1976.

170 See, e.g., Peroni 1989; Pacciarelli 1994; and Carandini 1997.

171 For a concise and clear definition of morphological and geographical features common to middle Tyrrhenian proto-urban centres, see Pacciarelli 1991b, 1994, 2001.

172 See, e.g., Guidi 1992, p. 454; Pacciarelli 2001, p. 212; and Fulminante 2003, p. 240.

173 As shown by Riva & Vella 2006, pp. 4–10, the idea of an 'orientalisation' (from Assyria, Phoenicia and Egypt) of Greek and Etruscan art originated from the very first discovery of 'Phoenician bowls' in princely burials in central Italy by the middle of the nineteenth century. Since then, according to these scholars, the idea of diffusion dominated scholarship for more than a century.

174 See, e.g., Peroni 1996; di Gennaro & Guidi 2000; and Pacciarelli 2001. Among classicists see Carandini 1997. Among scholars with different intellectual backgrounds, see Barker & Rasmussen 1998 and Smith 1996.

175 See, e.g., Barker & Rasmussen 1998, p. 84, with references to Snodgrass 1986, Morris 1987, 1991, and Whitley 1991 about the Greek experience; and Carandini 1997, p. 487.

176 Malkin 1994.

177 Malkin 1994.

178 Osborne 2005, p. 12.
179 See, e.g., various contributions in Stampolidis 2003, with conclusions summarised by Merrillees 2003.
180 Rathje 1995.
181 Bietti Sestieri 1992b, p. 686.
182 Bietti Sestieri 1992b, p. 686.
183 Colonna 1976; Ampolo et al. 1980.
184 Pacciarelli 2001, 2005; Nijboer 2005; Van der Plicht et al. 2009.
185 Bettelli 1997.
186 Toms 1997, pp. 85–86, fig. 1–2; see also Bartoloni 2005, p. 346.
187 Bartoloni 2005, pp. 346–48.
188 Naso 2000, 2006.
189 Riva & Vella 2006.
190 Fulminante 2003; Guidi & Santoro 2010.
191 See various contributions in Stampolidis 2003.
192 Renfrew & Cherry 1986.
193 Morris 2003.
194 See, e.g., Van Dommelen 2006, 2005, 1997; and Knapp 2006.
195 Horden & Purcell 2000.
196 Malkin 2003; Cunliffe 2008.
197 See Cunliffe 2008 on mobility in pre-historic Europe (pp. 19–26) and interactions in the Mediterranean (pp. 26–29), with a brief discussion of the network model. See also Horden & Purcell 2000; Purcell 2005: Harris 2005; and Hodos 2009.
198 For example, Sciacca 2006 provides an updated account of Urartean and Assirian luxury items in Italy between the end of the eighth and the beginning of the seventh century BC; Camporeale 2006 reviews Egyptian imports in Etruria between the second half of the eighth and the first half of the seventh century BC.
199 On Etruscan artefacts in the eastern Mediterranean from the Final bronze Age to the fifth century BC, see Naso 2000, 2006. On the connections of Vetulonia (northern Etruria) from the Tyrrhenian sea to the eastern Mediterranean, the Aegean, the Baltic and the Transalpine region in the eighth century BC see Camporeale 2007.
200 Giardino 1995; Bouzek 1997; Bietti Sestieri 1997; Moderos Martín 1997.
201 Sabatini 2006.
202 Cunliffe & Fernandez Castro 1999.
203 Van Dommelen 1997.
204 Whitehouse & Wilkins 1989.
205 The idea of the network has been used to explain the birth of the Greek city-state and identity as the product of reciprocity and interactions between mainland and colonial centres, where urban experiences most likely preceded those on continental Greece; Malkin 1994, 2003; see also Osborne 2005.
206 Finkelstein 1999.
207 Demand 1996; Iacovou 2005.
208 See, e.g., Morris 1987, 1991; Whitley 1991.
209 See, e.g., Horden & Purcell 2000; Purcell 2005; Harris 2005; Cunliffe 2008; and Hodos 2009.
210 Renfrew & Cherry 1986; Renfrew 1986, with particular reference to central Italy (Etruria).
211 For an introduction to the network model as metaphor see Wilkins 1991; Malkin 2003; and Fulminante & Stoddart 2012; for an experimental application of the network model (social network analysis) see Fulminante 2012b.

CONCLUSIONS

1 Rothman 2004, p. 75.
2 See Section 1.2, especially 'Multi-Trajectory (Anti-Evolutionary) Approaches'.
3 See, e.g., Yoffee 2005, pp. 169–70.
4 On this point see the introduction to Shelach 1999.
5 According to terminology borrowed from complex adaptive systems theory; Yoffee 2005, pp. 169–70.
6 Fulminante 2003.
7 Cazzella 2001.
8 Cazzella 2001, p. 267.
9 Colonna 1991.
10 Carandini 1997.
11 Bintliff 2002b.
12 See, e.g., Rajala 1999 for the area of Nepi.
13 Judson & Kahane 1963; Ravelli & Howarth 1987.
14 See, e.g., Bintliff 1999b, 2000.
15 Bintliff 1999b.
16 For a summary see Pacciarelli 2001; for Etruria see di Gennaro 2000.
17 Steponaitis 1978.
18 See among his other contributions Bintliff 1999a, b, 2000, 2006.
19 Guaitoli 1981b, d.
20 Nijboer 1997, 1998; Rasmus Brandt 2001.
21 Bietti Sestieri 1992a, p. 94.
22 Colonna 1988b; Carafa 1995.
23 Iaia 2005.
24 Van Joolen 2003, pp. 188.
25 Costantini & Giorgi 2001, p. 245. Olive cultivation is probably already attested during

the Bronze Age in Abruzzo; Fiorentino et al. 2000.

26 For an iconographic analysis and interpretation of this object from a ritual perspective see Torelli 1996.

27 Guidi 1981, 2000b, 2004.

28 R. Bradley 2000, p. 158.

29 R. Bradley 2000, p. 158. As shown by the classic work of De Polignac 1995 for Greece, also in middle Tyrrhenian Italy the counterpart of these 'urbanised' cult places is the institution of extra-urban sanctuaries, often to mark territorial edges and boundaries (as in the case of the *ager Romanus antiquus*, analysed in the present study) or to rectify and regulate 'ritually' and 'politically' inter-city federal leagues and inter-community interactions (emblematic examples are offered by Olympia in Greece and the Fanum Voltumnae, the 'Shrine of Voltumna', in Etruria).

30 See, e.g., La Rocca 1976, 1982.

31 Thomas 1991.

APPENDIX

1 For the period before the two world wars see Pinza 1905. See Chapter 2, note 71.

2 Müller-Karpe 1959, 1962.

3 Peroni 1960.

4 Colonna 1974.

5 Ampolo et al. 1980.

6 Bietti Sestieri 1992.

7 Bettelli 1997.

8 Peroni 1994, p. 210.

9 See Randsborg 1991, pp. 90–94 for central Europe and p. 101 for the Aegean; see also Randsborg 1996.

10 Bietti Sestieri et al. 1999–2000.

11 Peroni 1994; Bettelli 1997.

12 On this pont see, e.g., Peroni 1994, p. 216.

13 Bietti Sestieri et al. 1999–2000.

14 Bietti Sestieri et al. 1999–2000, esp. p. 174.

15 Bartoloni & Delpino 2005.

16 See, in particular, Vanzetti and Peroni in the final discussion of the conference; Bartoloni & Delpino 2005, pp. 658–60.

17 Pacciarelli 2005, but see also Pacciarelli 1996, 2001.

18 Nijboer 2005.

19 Van der Plicht et al. 2009.

20 Compare Peroni 1994; Bettelli 1997; and Bietti Sestieri et al. 1999–2000.

21 See, e.g., Shennan 1997, pp. 104–26.

22 For example, www.tutor-homework.com/statistics_tables/statistics_tables.html#chi (accessed 15 Janury 2010).

23 Bietti Sestieri et al. 1986; Gianni 1991.

24 Again by using the GIS geoprocessing function 'Assign data by location'.

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